COAL AGE

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Get Together!

Written Expressly for Coal Age
By Rufus T. Strohm

THERE'S a worried sort of feelin'
Floatin' 'round the minin' regions,
With the agitators spielin'
To the pick-an'-shovel legions;
But there's lots of hope, me hearties,
For defeatin' all their blether,
If the interested parties
Get together.

Wise an' thoughtful folks is certain
That a strike means rack an' ruin,
An' they're anxious for avertin'
Any troubles that are brewin';
So the cowards an' the whiners
Needn't fear for stormy weather,
If the owners an' the miners
Get together.

If both sides is truly hopin'
For a chance to shame the devil,
Let 'em talk sincere an' open,
Speakin' always on the level;
An' there won't nobody set 'em
Up to havin' doubts as whether
They'll agree or not—just let 'em
Get together.

But they've got to do it squarely,
With a lot of give-an'-takin',
An' discuss the question fairly,
Or they'll surely burn the bacon;
Let 'em speak as smooth as lawyers,
'Stid of usin' lungs of leather,
When the men an' their employers
Get together.

Ideas and Suggestions

The Miner and "Safety First"

By George N. Lantz*

"The Miner and Safety First" as a topic for discussion should bring out some interesting views. The safety idea is one that has gained such prominence in the last few years that it cannot be ignored by the miner.

It has been asserted that the miner is not in sympathy with the safety idea. Such assertions are only partially true, for we sometimes find that the miners are more interested in the matter of safety than the operators—sometimes both are equally interested. It is probably true, however, that the laboring element in the mining industry as a whole has been outstripped by the operators, both in interest and in application of safety ideas.

But if it were true that the miner shows no interest whatever in safety, the case need not be regarded as hopeless. Safety is not a new idea. It was formerly expressed in the adage, "A stitch in time saves nine."

New Ideas Coming Fast

The mining industry is developing so rapidly that the man who ascends a pedestal with an idea will soon discover that his worshipers have gone from him and are bowing down to an idea that leaves his own in insignificance. So it would be well to discard the pedestal and mingle with the crowd to impart his ideas.

The safety-first idea can be imparted in various ways—some may write, some may lecture, others may make laws, others obey or enforce them.

And there are still others who can seat themselves on a powder keg in the entry and make their personal appeal. Mr. Coxe suggests the right kind of personal work when he advises those in charge to talk matters over with the miners, pointing out examples of accidents due to recklessness and showing that modern conditions require modern methods; that their fathers failed to take certain precautions simply because such precautions were not necessary in their fathers' day.

The method can be carried still farther by showing them that their own carelessness might result in danger to their fellow workmen. War correspondents tell us that a soldier may risk his own life unnecessarily without condemnation, but it is against the rules of the game to put his fellow soldier in unnecessary danger. The same thing may be noted in dangerous trades. We all know of sons who try to keep the "old man" out of the place when it is dangerous; of experienced men who will assume necessary risks rather than pass the responsibilities to the inexperienced men.

I believe that safety of fellow workmen should be taught along with personal safety.

The miners and their organization have shown that they are capable of sustained, coöperative action; they have also shown that they can struggle for a principle. And when the miners become thoroughly interested in the safety idea, a decade may show them in the leadership of the movement.

*New Straitsville, Ohio.

Standardizing Mine Conditions

By Forney L. Parker*

In the day's work the miner must either standardize himself to conditions or standardize conditions to suit himself. Where the inlets to the mine, such as slopes, shafts or travelingways, are in poor condition, the timbering done in a haphazard manner and the gangways wet and muddy, the employee consciously or unconsciously does his work in a slipshod manner.

By having haulageways of insufficient area, carelessly placed timber, a poor roadbed, return airways that are too small and inadequate pumping facilities, the effect upon the miner is not only to make him careless, shiftless and inefficient, but the resultant loss to the company due to places being blocked out with gas, falls of rock, derailment of cars and the flooding of the mine in times of high water is considerable.

I know of one instance in which the mining conditions on a certain level were not of the best, and the men did not care to work on that level if they could get work elsewhere. When the miners came out to the main slope in the evening upon the completion of their shift, they often had to wait three-quarters of an hour before they could get accommodation to the surface.

An Inexpensive Improvement

During this time they were compelled to stand crowded together, with the smoke from their flaming lamps fouling the atmosphere. Tired out from their day's work and with the added irritation of their condition they did not have the proper attitude toward their work and the company. Finally a change was made. The ribs and the roof of the waiting room were whitewashed, electric lights were suspended from the top and a long bench with a back-rest was constructed for the men. This inexpensive improvement and the cheerful surroundings did much to make the men contented, and the result was that the company was enabled to get good miners to work on that level—men who worked with greater zest than if the old conditions had prevailed.

Where the conditions of a mine are standardized, it is a pleasure for the miner to work there and he will not only do his work better, more quickly and more conscientiously, but he will be more sensitive to good influences and proper instruction.

Again, in planning for the further development of a mine, plans should be made for conditions that will prevail when the different sections reach that stage, so that the best of harmony will always exist between employer and employee.

*Glen Carbon, Penn.

Convenient Tipple-Track Layout

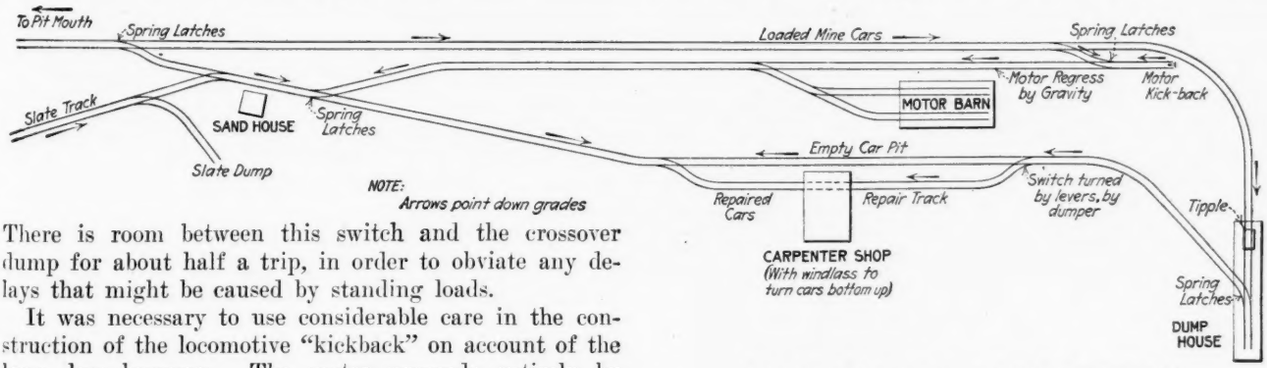
By George S. Brackett*

The time consumed by the locomotive, after landing a trip of loaded mine cars at the tipple, in getting started back into the mine with the empties is often underestimated or overlooked. A 3-min. delay is a small matter in itself; yet multiplied by 20 trips daily it is a matter of close to two extra trips.

The haulage motor, arriving with a trip of loads, is stopped, uncoupled and moved ahead; the switch is turned; the trolley pole is reversed and the motor is started back toward the front end of the empties. There is another stop and start at the empty switch and another at the head of the empty trip. It is impossible to eliminate these reverses, but usually they absorb more time than they should. These stops when accumulated for the entire day show a startling loss of time.

The illustration shows an arrangement of tipple tracks at a mine where the production was dependent upon the performance of the haulage motor, and in the design every effort was made to get the motor started back into the mine with as little delay as possible.

The motor leaves the loaded track by a "flying" switch onto the motor "kickback." The word "flying" is in this case a misnomer, as the switching is done at a moderate speed and with the trip entirely under control.



ARRANGEMENT OF TRACKS AT TIPPLE

There is room between this switch and the crossover dump for about half a trip, in order to obviate any delays that might be caused by standing loads.

It was necessary to use considerable care in the construction of the locomotive "kickback" on account of the long, low bumpers. The motor proceeds entirely by gravity onto the empty track and down into the empty pit. The trolley wire is caught at the motor-barn switch while the locomotive is drifting, and the sandhouse is placed at a point approximately where the machine would come to rest and start back toward the empty pit. This stop is utilized for sanding if required.

Cars coming from the mine loaded with slate, take the same route as the motor, but are held on the regress track until the motor makes the next trip. They are pushed to the slate track with no extra stops. The empty cars from the slate dump are conveniently transferred into the empty pit.

The relative position of the pit mouth and the tipple at many mines does not permit conveniently arranged tracks, although there is little trouble from snow in the winter. Extensive outside tracks are always likely to be blocked by snow, and yet the most satisfactory arrangement is that which gives the best service for the greater part of the year. In the opening of new mines this plan is suggested as one the convenience of which will many times offset troubles from winter snows.

*Engineer of mines, Flemington, W. Va.

Doorless Coal-Mine Cars and Rotary Dumps

By F. C. Cornet*

Why are coal operators partial to mine cars having leaky, troublesome and expensive doors? Why do they consider it preferable to dump coal by chuting it out of such cars with the most noise and breakage possible? Why do they not use doorless cars and discharge these on rotary tipples, pouring out the coal noiselessly against inclined chutes, without breakage?

I have asked these questions many times since I visited the first coal mine I ever saw in America shortly after arriving in this country 20 years ago. The first person I asked was the superintendent of the mine. He could not see at all why I found fault with the noise. In fact he rather liked the noise. But he was willing to admit that it did not do the coal any good to break it. He could not understand that noise means breakage.

Since then several engineering firms have tried hard to convert our coal men to the rotary tipple, but with little success. This does not surprise me now. It was only a few weeks ago that one of our most prominent operators told me he objected to rotary dumps because they pulverize the coal, twist the cars out of shape and shake to pieces the strongest tipple structures.

How is that for an answer? I know the man has never been near a rotary tipple or seen a doorless car in his life. But he is considered by many as a good example to imitate in all he does in the mining line.

What do *Coal Age* readers think about it?

For myself, I have always thought that a rotary dump is less hard on the coal, the car and the tipple structure than an ordinary dump. I am also of the opinion that the doorless cars are more durable and cost less than those with doors. Of two cars having the same gage, length, width and height the doorless one may be so designed that it will hold appreciably more coal than the one that has a door. No matter how well-fitting and carefully closed a door may be, it will leak, especially when the car is loaded with dust made by chain-machines.

Leaks are of course worse when the door is defective. A door which has become opened on the road because the miner has imperfectly fastened it or on account of some accident may cause the greater part of the load to be lost in transit. A mine operated with doorless cars will consequently always be kept freer from dust than would be the case were the cars provided with doors.

*Mining engineer and geologist, Charleston, W. Va.

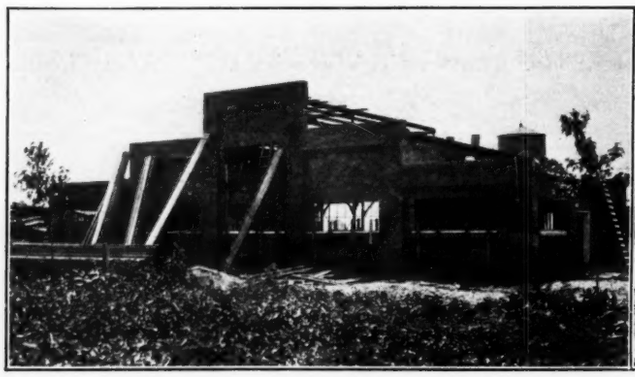
Modern Wash House for Miners

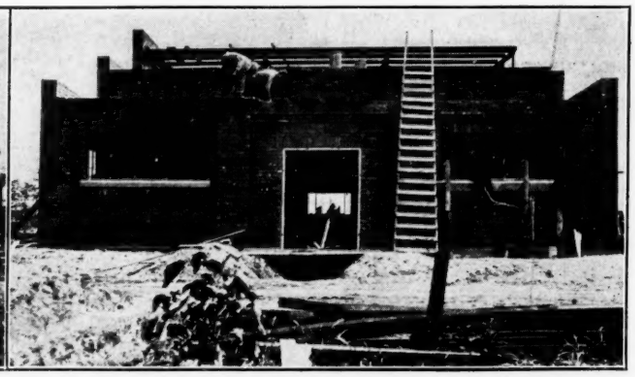
By John A. Garcia*

SYNOPSIS—The design of a suitable bath house for coal miners is by no means an easy problem. The one here described appears to meet all requirements admirably at a cost of $15.86 per man.

Since the mining laws in most coal-mining states now require the operator to furnish facilities for the men to bathe and change their clothes, the wash-house question is one of much interest to mining men, especially in those districts where the operator, either by law or by agreement, is not allowed to receive any compensation for the service rendered. Where this condition exists, it is especially desirable to keep down the initial cost of the layout, as well as future maintenance and operation expense.

Some of the main factors to be considered in designing a wash house at a coal mine are as follows: Facilities and arrangements for accommodating a large number of men in a short space of time; large quantities of warm water to be furnished in a short time, with temperature regulated so that the men cannot be scalded, but with an arrangement for economy in the amount of water used; equipment for safe-keeping of clothes, drying and ventilating them and at the same time rendering them readily accessible to the owner only; fireproof construction, drainage, heating and light; rugged equipment that will stand abuse, and sufficient area to prevent crowding and congestion.





FIGS. 1 AND 2. TWO VIEWS OF THE WASH HOUSE DURING CONSTRUCTION

To Meet the Requirements Is Not Easy

To take care of these requirements and keep down the cost is a problem that has given many an operator considerable worry. The wash house described in this article conforms to all these fundamentals at a cost of $15.86 per man, which under the conditions seems to be about as low as can be expected, although it could be reduced somewhat by using warm water only, instead of hot and cold, by using boiler feed pumps instead of a tank, by the elimination of the bosses' bath and the first-aid room and possibly a few other items which like the foregoing are highly desirable, but not absolutely necessary. The bosses' bath, first-aid room and cold-water facilities at this wash house cost close to $1,000, so that cutting them out would reduce the cost per man to about $13.36 for a fireproof house equipped to take care of 400 men.

The water for the showers and basins in this building is heated by either exhaust or live steam or, if conditions demand, by both. Where live steam is used, a pressure-regulator valve is installed on the live-steam pipe to reduce the pressure to about 20 lb. maximum, or if desirable, a heater built for high steam pressure can be used, although this is not recommended for a coal mine where the fan-engine exhaust is usually available and because the radiators require low-pressure steam anyhow.

The cold water from the tank flows through the coils under tank pressure, and the steam passes through the heater around and about the coils, exhausting at the top and heating the water en route. The automatic regulator valve controls the amount of steam entering the heater and thereby regulates the temperature of the water.

The valves on the showers and bibs at basins are of the self-closing type, so that little water is wasted. The valve on the shower is controlled by a short chain that hangs down just in reach of the bather. He is supposed to hold onto the chain with his left hand while he uses the soap with the other, but when he releases the chain to rub his body or has finished his shower, the valve snaps shut. This arrangement makes a material reduction in the amount of water used, since most of the wasted water in the wash houses comes from continuous feed showers, the water flowing from them a large part of the time when the bather has no need of it or when no one is under the spray.

The clothes hangers are arranged for an average spacing of 22 in., which is found to be entirely sufficient to prevent contact and still not wasteful of building space. The hangers are made of malleable iron, have three prongs or hooks to which the clothes are attached and a small wire basket for soap, lamp, etc. The whole outfit is attached to a stout chain and raised or lowered from the ceiling by means of a pulley attached to the ceiling. When clothes are hoisted, there is a clearance of from 8 to 9 ft. from them to the floor, and the monitor sash at the top of the building allows the warm air to flow up through the suspended clothing, thus drying it out and carrying off all offensive odors.

*Consulting engineer, Chicago, Ill.

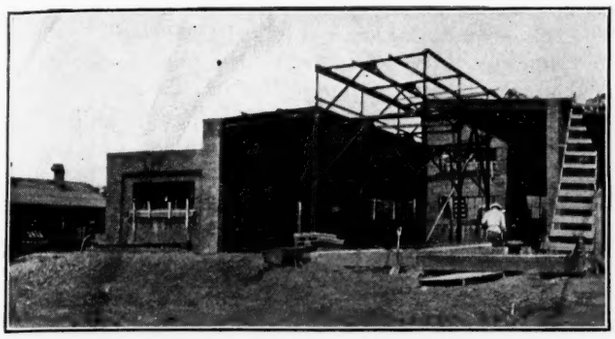


FIG. 3. ANOTHER VIEW OF THE CONSTRUCTION

Once a week the monitor sash and windows can be closed and sulphur candles burned overnight and if necessary over Sunday, so that the clothing of 400 men may be well disinfected once a week for the price of a few sulphur candles or other disinfectant.

The building is heated by steam radiators on the floor at the wall, which have wooden shields to prevent burning the men. Exhaust steam is used in the radiators, though of course live steam could be used if a pressure regulator were installed.

The floor in the entire building is of concrete with a slight pitch to drain traps, so that the water will drain off the floor and the wash house may be thoroughly cleaned with a hose in a few minutes.

Partition Separates Hanger and Dressing Rooms

The hanger room is separated from the shower section, so that the water and steam from the showers will not condense on the clothes. This also enables the men to dress and undress without having water splashed over them, as is common in wash houses not so arranged.

The wash basins in the shower room were installed because there are always a few men at a mine who do not want to take a shower or who want to wash only their faces and hands. The basins with self-closing bibs were used instead of spigots in an effort to cut down the water consumption. The basins do get dirty, however, and require cleaning after each man, and it may be better to use a slow-flowing spigot instead of the basin, so that only one-third the number of basins shown were installed to determine how they worked out in actual service. To date there has been no objection to them from either side.

No data are available at present on the quantity of water used per man, but the equipment was figured on a basis of 30 gal. per man as a maximum, and it is hoped to get the quantity down to not more than 15 gal.

The cost of this wash house, including every item of expense incident to its construction and equipment, is given herewith, the figures being compiled from payrolls and invoices.

These costs are for a 400-man wash house arranged with a temporary end in the hanger room, so that the building could be extended to accommodate more men in units of 100. The first plan was for a 300-man house with extension for 100 more men, but before the walls were up the coal company decided to make it 400 to begin with and put in the temporary end so that the capacity could be further increased as the number of men employed increased. The mine now gives work to

FIREPROOF WASH HOUSE FOR 400 MEN

Material:		
Brick		$433.20
Corrugated steel for temporary end of hanger room		33.08
Barrett specification roofing		127.19
Mortar color		62.11
Cement		231.00
Millwork		47.25
Lumber		204.48
Hot-water heater and regulator		315.00
Clothes hangers		225.00
Miscellaneous hardware for hangers		75.00
Pipe, showers, lavatories for hot and cold water		313.40
Radiators and pipe for same		571.52
Sand and gravel for floors and foundations		105.97
Steel monitor and side sash		289.00
Glass for sash		58.00
Putty for sash		19.50
Lockers for bosses' wash room		23.50
Structural steel		399.86
15,000-gal. water tank, 3-in. fir, 12x16 ft., with steel tower		564.00
Drain tile and wall coping		53.71
Total material		$4,151.76
Labor:		
Unloading and hauling material	$114.41	
Foundations	178.85	
Installing steel	20.48	
Laying brick, mixing mortar, etc.	250.00	
Tank tower and foundations	154.00	
Roofing	251.10	
Plumbing, concrete floor, hangers, lockers, etc.	786.00	
Drain tile, conduits and piping to building	136.05	
Total labor		1,890.89
Labor and material cost		$6,042.65
Engineering		302.13
Total cost of wash house		$6,344.78

400 men at $6,344.78 = $15.86 per man, including bosses' bath and first-aid room.
400 men at $5,344.78 = $13.36 per man, excluding bosses' bath and first-aid room and cold-water facilities.

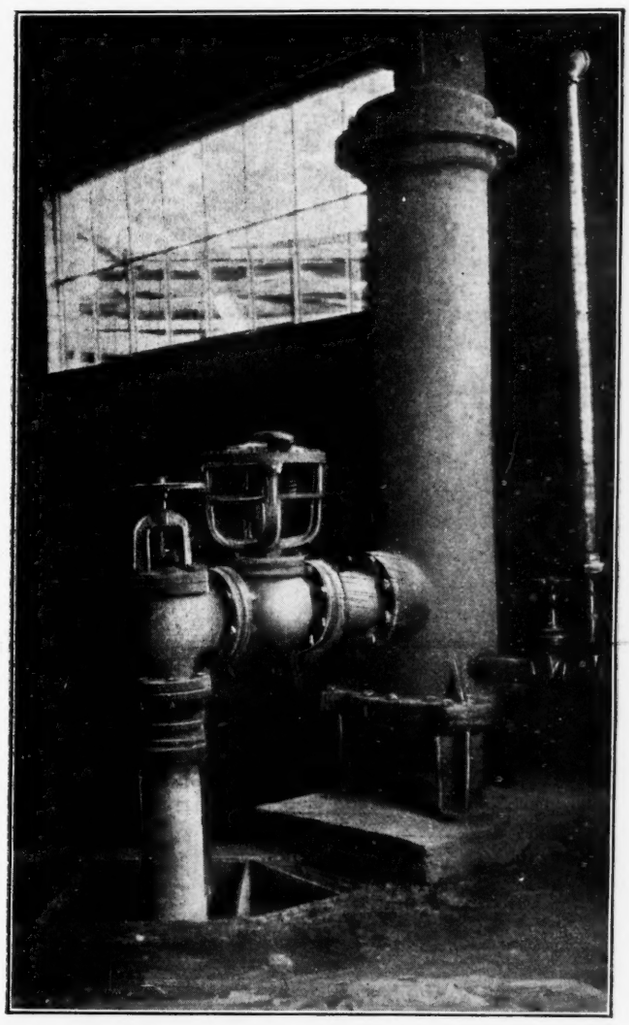


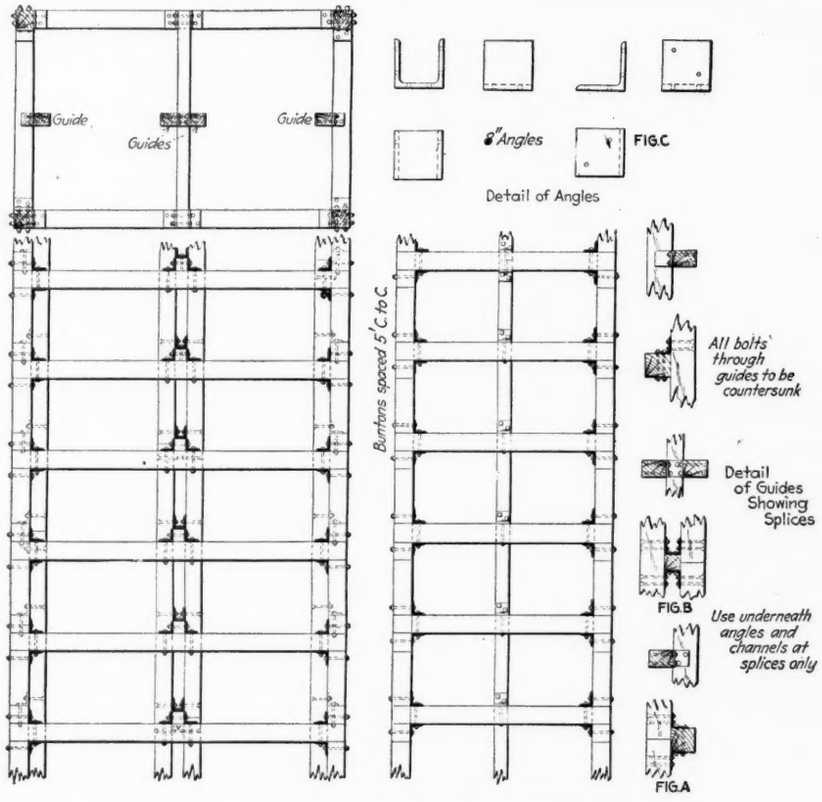
FIG. 4. THE BATH-HOUSE WATER HEATER

about 300 men, with a maximum number when fully developed of about 600.

The hanger system at this wash house has proved to be very satisfactory and much better than lockers, mainly because of the design of the building and use of the monitor sash, which permits good ventilation and rapid drying of the clothes.

With the hanger system there is no accumulation of refuse and dirt, the building is sanitary, clean, warm and well ventilated and can be washed and disinfected at practically no expense. As there is no regular attendant, a top employee devotes about half an hour each day to the regulation of ventilation by manipulation of the monitor-sash operating device and turns the hose on the floor. This labor cost, plus the cost of water and steam, is about the total for operation, but of course interest on investment and depreciation should also be charged against the plant.

After seeing the men coming to and going from the mine, clean and dressed in their regular clothes, without the odor and grime of the mine all over them, one cannot help but believe that somehow the system pays good dividends on the investment even though the men bathe free. It must also be concluded that these 400 men going home at the end of the day dry, clean and comfortable are better employees than the same men a few months ago straggling along in their sweat-soaked pit clothes with chilled and dirty bodies and so odoriferous that the interurban roads were compelled to furnish "Jim Crow" cars for them. At least bathing promotes a man's self-respect, which is worth money to his employer as well as to the man himself. Herein lies the true value of wash houses at coal mines.



METHOD OF JOINING SHAFT TIMBERS

Using Angles and Channels in Shaft Timbering

By T. D. Thomas*

The method of shaft timbering shown in the accompanying illustration was adopted by the New River Co. in the Scarbro shaft at Scarbro, W. Va.

The many advantages of this design make it preferable to the method of notching the guides and buntons. The notching of these members requires the services of an expert, one capable of laying out the work accurately. It also decreases the strength of the timbers and makes them more susceptible to decay.

The scheme of using angle-bar fastenings in shaft construction simplifies the framing, in the first place, and shaft repairs in the second. The method of fastening the guides to the buntons with wood screws or even by bolting through the bunton was not successful, as the wood screws broke easily, and their fracture could not be readily detected in the bolting of the guide through the bunton. The bolt, in working loose, enlarged the hole in the bunton, and the proper alignment of the guides in either method was hard to maintain.

The method of making long splices in the guides and notching these timbers to fit the buntons was tedious work, especially in the replacing of broken guides. In making the guide joints, it will be seen that the buntons are placed every 5 ft. c. to c. and the guides are jointed every 30 ft., thus placing the splice in the center of the bunton. The outside guide joints are made as shown in Fig. A; the center guide joints are as shown in Fig. B. Buntons are fastened by using the angle shown in Fig. C. All angle and channel fasteners are 8x8x½ in. The Scarbro shaft constructed in this manner has been satisfactory in every way.

*Sales manager, the New River Co., Macdonald, W. Va.

Students' Annual Tour

The members of the senior class of the department of mining engineering, University of Illinois, recently returned from their annual inspection tour of mines, which was in charge of Prof. E. A. Holbrook. This year, through the courtesy of the various companies, studies were made at the mines and plants of the Paradise Coal Co., Duquoin; Old Ben Mining Corporation, West Frankfort; Chicago & Carterville Mining Co., Herrin; and Peabody Coal Co., mine No. 3, Marion. Afterward the party visited the offices of the Western Coal and Mining Co., Railway Exchange Building, St. Louis, where the office end of coal mining was explained. Following this several days were spent studying the lead mines and concentrators in southeastern Missouri and the lead smelters at Collinsville, Ill.

Mine Warehouse System--I

By E. I. Roberts*

SYNOPSIS—At many mines the lack of a proper system in the purchase, storage and issuance of supplies is the cause of heavy losses. To avoid these not only should the warehouse keeper be tactful, but the stores should be carefully and conveniently arranged.

With the tendency for larger mines, more expensive equipment and the elimination of manual labor as far as possible, more accurate detailed costs and a keener investigation of efficiency and economy in all departments of mine operation are becoming the rule.

It is astonishing that many mines, finely equipped and representing an investment of hundreds of thousands of dollars, are found backward in properly installing a definite system of handling, issuing and accounting for materials and supplies.

It would appear that this is one of the last items that is considered by a coal company during either construction or operation. The problem is not fairly met in most cases until the mine becomes fully developed or until the lack of some such system is felt by the management.

A little investigation, however, into the possible losses that may arise through the lack of a definite system of accounting for supplies will reveal that this becomes a vital question, not only during the operation of the plant, but also during its construction—in fact from the time that the first load of material is placed upon the undeveloped ground.

A brief investigation of this subject will show that the quantity of material handled runs up into the hundreds or thousands of dollars per month, varying of course with the size of the mine and to the extent to which it is a machine-operated proposition.

About 11 Per Cent. of Coal Cost Is for Supplies

By a perusal of state reports, etc., it is found that the cost of supplies varies from 8 to 14 per cent. of the total cost of producing and marketing the coal. Taking 11 per cent. for supplies as a fair mean and considering the coal to average $1.25 per ton, these supplies cost 13¾c. per ton, or with the mine producing 1,000 tons daily, $137.50 for supplies per day and between $3,300 and $3,400 per month. In the case of a 3,000-ton proposition approximately $10,000 worth of materials has to be handled when the mine is running full time.

Again, taking into consideration that many mines make a practice of handling much of their material through jobbers instead of direct from the manufacturers, it is seen that a loss of from 2 to 5 per cent. can easily arise through this practice. This custom is in vogue chiefly where the superintendent is expected to do the purchasing of his supplies personally. He seldom has the time to wait for competitive prices from different factories, and this item must be handled particularly through the warehouse, unless a purchasing agent is especially provided for this duty.

*Johnston City, Ill.

Proceeding further with the investigation of the possibilities of loss, we find that often the mine operation suffers because certain materials or repair parts are not on hand, and in extreme cases the mine is shut down entirely, pending the arrival of some part which either cannot be located or probably was never provided.

When the foregoing condition has once arisen, steps are usually taken to see that such a shutdown cannot again occur. A place is provided as a warehouse, or a storehouse is built. This is completely stocked with all classes and sizes of materials and fittings, irrespective of whether such supplies or parts will tie up the company's money indefinitely or not. Where such materials are unwisely purchased, another loss occurs.

Furthermore, there are incidental losses which should be avoided even if a warehouse and a clerk are provided. This will depend largely upon the experience and diplomacy of the clerk and what training in economy this man has.

A loss of this kind commonly occurs where fittings have become worn and are thrown away and new ones are issued in their place. A good means of avoiding this is to have the old fittings always brought back to the storehouse, where a competent clerk will inspect them, refitting worn parts and putting back into service many fittings that are apparently of no further use.

Standardization Means Much

Again, a careful man will endeavor to standardize the different parts of various types of machines, so arranging his materials that he will not be obliged to carry in stock a multiplicity of parts where duplicates might be used. Lubricating arrangements are an example. Such standardization avoids another loss through money being unwisely tied up.

Where the warehouse keeper is required to do the purchasing, it is highly necessary that this be done only after proper investigation. All classes of manufacturers are proclaiming the advantage of their particular product, and it surely requires a man familiar not only with business custom, but also one possessing sufficient technical training to size up fully the material specified by any manufacturer.

But he should not be in any way bound to any particular manufacturer simply because it is known that such a firm always provides the particular article and material specified. It is well recognized that with certain types of equipment, mining machines for example, an excessive price is sometimes charged for the component parts.

In my own experience an instance arose where a certain worm gear was price-listed in a machine-part catalog for $21, the actual cost with discount being approximately $14. By submitting a broken worm to a certain company whose business was the manufacture of just such gears, we were able to purchase the same part made from the same metal and of the same finish for slightly over $10, delivered to our own warehouse.

Another instance of economical purchasing was the placing of our contract for the delivery of props. In the past props had been purchased from a firm whose

business was the selling of such material to the mines, and we had paid 7c. for a 7-ft. prop delivered in our yards. Today we have the same prop delivered at the same point for approximately 5½c. This was brought about by the clerk making a trip to where the loggers were at work cutting the timber. He then arranged for purchasing the props direct. Another saving which arose out of this trip was the arrangement made to have only seasoned timbers loaded. This has saved us money through freight and handling charges alone.

Still, where too much work is put on the warehouse keeper, other losses are sure to arise through the improper checking of material. Instances have been known where props have been unloaded and counted, the whole number having been passed through as O.K., when on future examination over 100 props were found that were unsuitable for the work and were not up to specifications. This happened because the store clerk was unable to

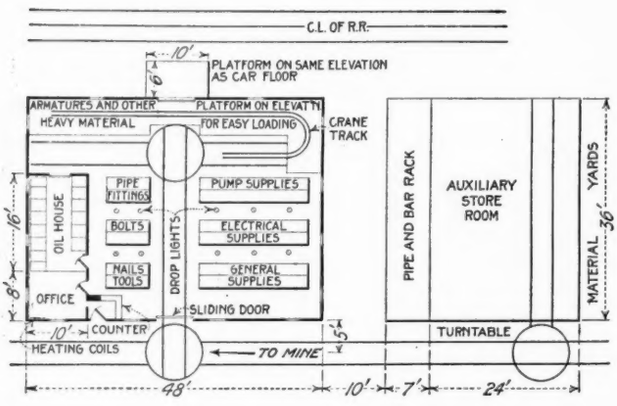


FIG. 1. PLAN OF A CONVENIENT WAREHOUSE

check this material properly, this work being done by the unloaders.

Another instance was where 50 or 100 springs for rheostat levers were ordered. These were counted, and the number found correct. The invoice was O.K.'d and sent through. Several weeks afterward a requisition came in for a dozen of these springs, which were issued, and it was found that the wrong size and type had been sent.

Before proper springs were secured, the rheostats were patched and other starting-box troubles were soon noted. This caused a definite loss and arose through improper checking. These and similar cases might be multiplied indefinitely.

A Warehouse Is Used To Prevent Loss

Even with a clerk in charge the chief function of the warehouse—to prevent loss—is not always considered. At such places materials are often given out *ad infinitum*, no check being made of the quantity issued, no requisition being required therefor of type and class and no check being made as to whether such a quantity is really needed or whether half the number will answer the purpose. Other losses therefore occur, since frequently more fittings are asked for than are really required, the idea being that it would be wise to have an extra fitting handy in case of another breakdown. Such a fitting often becomes misplaced or lost.

At mines that have been in operation for some time and where no proper method for the control and handling of supplies has ever been installed, it is sometimes difficult to get a system properly started and the management is inclined to believe that such a system is not all that it should be. This belief may arise from one or more of the following causes:

The older foremen begin to believe that their honesty is being questioned and that their ability to judge the fitness of what they require is being considered doubtful. Finally they think the whole system is too much red tape, and they either put obstacles in the way of the proper execution of the system or become careless as to doing their share of keeping the work in shape.

It is noticed that telephoning for material becomes a habit instead of being used only for emergency. Requisitions are promised at night. The warehouse keeper is then behind with his books, and he becomes dissatisfied. Again, where the warehouse clerk works directly under the superintendent, it is noticed that it is sometimes difficult to keep even this official uptodate in filling out requisitions for the material he orders.

At some places it seems to be quite a habit for the foremen to go to the warehouse and, upon seeing a tool or a fitting which they think they need, to obtain a supply regardless of whether the requirement is immediate and actual or merely imaginary.

Warehouse Man Must Be Diplomatic

It is therefore necessary that the warehouse keeper at such a place be a man who is not only conversant with the proper purchase and handling of all different classes of mine material, but who is diplomatic in his dealings with all employees that come in contact with him in the wareroom. He must be sufficiently strong to steer other men clear of any violations of warehouse rules and tactfully impress upon them that he is one of the main gears in the mine-operating machine.

To efficiently carry out his duties the store clerk should have proper arrangements, a handy wareroom, a simple reference system and a definite method of requisitioning. Not even a screw should be issued without a receipt being given in the form of an order. It is also necessary that some kind of an accounting system be adopted that makes him directly responsible to the company.

Considering, then, a tentative system which will comply with these requirements and which as far as possible conforms with coal-mining conditions, we will first deal with the details and arrangement of a convenient wareroom.

One requisite is that no more material than is absolutely necessary should be handled twice; another that all heavy material should be moved directly from the unloading point to the place of use with a minimum number of operations. However, at times heavy parts, such as armatures, motor trucks, etc., will have to be carried in stock. By reference to Fig. 1, which shows a suggested plan, it is noticed that the heavy supplies are handled over the least possible distance and also are so stored that when they have been ordered they can be loaded directly from the platform to a truck or mine car without excessive handling. With the installation of a small traveling crane arranged so as to move on two small flanged wheels, which are mounted on rails or channel irons and may be pushed by hand, a considerable amount of heavy material can be handled by two men in a short time.

Supports for armatures should be made so that they can be kept dry and clean at all times. These supports should be placed in such a way that there is no danger of heavy material knocking against and injuring either commutators or coils.

A platform is shown, which extends out to the side of box-cars and on which supplies may be unloaded before being stored in bins or elsewhere. A track of the same gage as that employed in the mine runs to this platform, and cars may be unloaded directly into the mine cars or run into storage. Turntables are necessary so that trucks can be pushed as near material to be loaded as possible, thus avoiding the expensive carrying of heavy supplies.

Pipe and Iron May Be Stored Outside

Pipe and bar iron may be stored in this building, but the rack must be so placed that the material may be loaded without interfering with or injury to other materials. Preferably this class of stock should be stored outside. A rack therefor may be built as a leanto and constructed to protect the bars and pipe from the weather.

Pump parts and supplies are shown placed at some distance from the office as compared with pipe fittings and bolts. They are not required so often. Electrical supplies are concentrated at another point or distributed in bins in a particular section of the warehouse. By this method of storing supplies—that is, classifying them into different sections of the building—it becomes much easier for the clerk to find and store his small supplies.

Tools and other equipment that are requisitioned daily should be stored closest to the office, where they are most easily reached and where their issuance will not cause any loss of time. It is a good plan for the surface laborers to be instructed to take all tools to the warehouse at night for safety. By this method a definite check is kept on pinch bars, shovels and other tools. Also any tools that need repairing or refitting with new parts can always be seen by the warehouse clerk when they are brought in at night. Arrangements in the warehouse should be made to have this work done.

It will be noted that the oil house and office are partitioned off from the main stockroom floor. This partition should be fireproof and so installed that any heating that is necessary may be confined to this small section of the building. The heating of the entire building is seldom necessary and only means a large additional cost for a slight advantage, for with the continual opening of doors and passing through of trucks, etc., it is found that it is practically impossible to keep such a building warm.

In the oil house as well as in the office, heating coils should be placed, which may be heated with exhaust steam. A Bowser oil-handling apparatus or some similar system soon pays for the extra investment by the saving of oil effected and the proper issuance of this supply to the respective departments. It also lessens the possibility of fire.

The counter *A* is placed just inside the door, so that during inclement weather the man waiting for supplies is protected. This counter, however, must be so fitted that no unauthorized person can pass through into the storeroom proper.

The requisition should be passed through a small opening into the office. This is checked by the clerk, who then issues the required supply over the counter.

Testing Alaska's Coal

The Government's decision to throw open the vast coal fields of Alaska means much to the West. It means that Alaska's industries will be assured of an abundance of fuel right on the ground and that the Pacific Coast supply of coal will be increased to a point to meet all its own demands and leave a surplus for shipment abroad, thus avoiding to a large degree importations from British Columbia and far-away Australia. But Alaska coal was a factor of unknown strength in the business world until a rigid test was applied to establish its worth. That test, extending over a long period of time and performed scientifically and practically, has decreed a verdict that should conquer conservationists for all time.

The United States cruiser "Maryland," one of the most efficiently manned war vessels in our service, was used to try out coal from the Matanuska fields. The coal was found to be 98-per cent. efficient.

During a 7-day port test all coal, ash and clinker were weighed, and only one boiler was used. Forced draft was applied for 2 days. Run-of-mine was used for five days, slack 1 day and lump coal 1 day. There was little clinker, but the ash was somewhat higher than that of Pocahontas coal. The coal coked readily, was friable and easily worked by firemen. The soot deposit was 25 per cent. higher than Pocahontas, but the load during this week of test would ordinarily have required two boilers burning Pocahontas.

Several Tests Were Made

A 4-hr. forced-draft test was made with thin fires and dampers partly closed. The furnaces were a mass of yellowish flame, and not an excessive amount of ash formed. The coal coked easily, and the firemen said that it was the easiest 20-knot run the vessel had ever made.

The 24-hr. 15-knot test started with 12 boilers. Later it was necessary to cut out 4 of these to get the highest efficiency. CO_2 analysis was generally over 9 per cent. Fires 6 to 8 in. thick were always glowing. The coal burned like pine knots, giving off a yellowish incandescent flame. The ash pans were bright and clinker was not excessive; soot was a trifle greater than with Pocahontas coal.

The 10-knot test started with 6 boilers, but later this was reduced to a battery of 4. The power from these was more than ample, as at times there were 4 evaporators working. Fires were easily worked, and the coke broke freely. The clinker was not hard, and the fires were bright and level and sometimes thicker than 8 in.

In all the tests the coal showed very little foreign matter, and slack appeared to burn better than lump. There were no evidences of gases being given off during the tests. The chief characteristic of the coal is its friability. Lumps pulverize easily.

The "Maryland" made the tests running on and near Puget Sound, and residents along the shores thought the ship had a demented master from the manner in which it raced about. Naval officials are enthusiastic over the results of the test of Alaskan coal, and if there ever was the problem of getting plenty of coal for a gigantic Pacific fleet, that problem has now been satisfactorily solved, perhaps for all time. Alaska's untouched coal wealth is as great as her gold and copper riches and awaits only intelligent development.

Oil-Filled Electrical Apparatus*

In the early days of the development of the electrical industry, and particularly of electrical transmission, the opening of high-tension air switches was a serious undertaking and was avoided whenever possible. When an occasion arose demanding the opening of such a switch, it was customary to assign two men for the work—one to pull the switch open and the other, equipped with a wooden pole, to knock out the arc between the switch points.

At that time the words "high tension" did not have the same significance as that associated with the term today. Comparatively low potentials were in use, requiring small capacity distribution and transmission apparatus as judged by present-day conditions. Increasing pressure and current-carrying capacities have made necessary the design and construction of adequate protective devices.

Before transmission systems of 50,000 to 150,000 volts could be placed in operation it was necessary to find a material having greater dielectric strength than air, in order to insure circuit breakers, switches and transformers against injury. Mineral oil complying with certain specifications has the requisite dielectric strength and at the same time does not interfere with the working of the apparatus, so long as care is exercised in testing the oil and inspecting the equipment.

There are oil switches and transformers that have been in constant use for over three years, with neither the apparatus nor the oil showing any evidence of deterioration at the end of that time. These must be considered as exceptional cases, however, because oil-filled electrical apparatus and the oil itself will ordinarily fall short of the original specifications after a comparatively brief time unless carefully maintained. Since oil-filled apparatus is installed for the purpose of protecting the electrical equipment and thus reducing the interruptions to service to a minimum, it is of prime importance to understand just what causes breakdowns and how to guard against them.

The oil for transformers should be neutral in its reaction and should not attack the insulation about the transformer coils. It should not become acid nor precipitate any kind of solid matter when heated for a considerable time. It should have insulating qualities and at the same time should not volatilize nor burn easily.

Most mineral oils contain a small quantity of solid matter in a gelatinous or colloidal solution, and electrical stresses tend to separate these solids in suspension in the oil. Lead oxide in the varnish and lead alloys in the transformer lining are attacked by the oil with the formation of a sludge. Any solid matter in the oil is quite likely to close the ducts and by preventing circulation through the windings cause local overheating, which damages the oil and tends to generate gases, particularly hydrogen, as well as to injure the insulation.

Arcs below the surface generate gases, principally hydrogen and various hydrocarbons, which rise to the surface. This might cause sufficient pressure to rupture the casing if vents were not provided. They are inflammable and sometimes become ignited by an arc which pierces the oil to the surface or by the corona on the conductors above the oil or by an open flame.

The oil used in switches should conform to the same specifications as transformer oil, except that its flash point should be materially higher and that more rigid limits should be prescribed for its viscosity. This latter point is important, because if oil is used that readily becomes viscous the operation of the switch is hindered, its opening is retarded and the arc is not readily extinguished.

It is generally thought that the arc formed when a switch is opened is broken by the oil which flows in behind it, but there is some reason to believe that the gases also have an influence in suppressing the arc. The gases reaching the oil surface become mixed with air, so that if a succeeding arc should pierce the oil to its surface it would ignite the gases and cause an explosion, as already described in connection with the transformer. It is therefore essential to have a definite quantity of oil above the point of formation of the arc in order to reduce as far as possible the chance of explosion.

*From the "Travelers Standard," October, 1915.

A West Virginia Tipple Fire

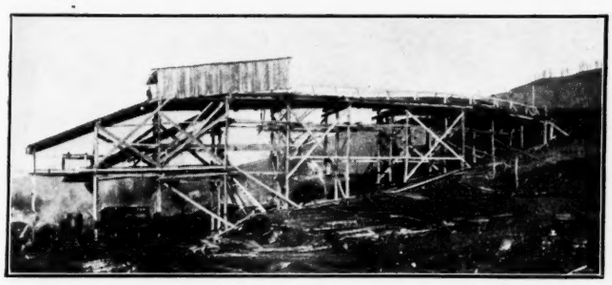
The accompanying illustrations show the destruction by fire of the tipple at mine No. 40 of the Consolidation Coal Co., on the Monongah division of the Baltimore & Ohio R.R., between Fairmont and Clarksburg, being about 10 mi. from the former place. The fire occurred early in the morning about 5:30 a.m., on Dec. 16.

THE CONSOLIDATION TIPPLE AT MINE NO. 40 BEFORE THE FIRE

This tipple was equipped with screens for making all the various sizes of coal prepared in the section. It was also fitted with box-car loaders for all grades of coal. Three loading tracks with a capacity of 33 empties and

AFTER THE FIRE A PART OF THE TRESTLE WAS LEFT

ANOTHER VIEW OF THE RUINS



THE TEMPORARY TIPPLE

39 loads were installed. The tipple was credited with a capacity of 2,000 tons per day.

The loss is covered by insurance. Plans were immediately started for the construction of a temporary tipple, and it was estimated that the mine would begin operation and loading coal within 10 days.

Coal Outlook in Montana

By John Sanderson*

The report in your Jan. 1, 1915, issue, in which I am credited with giving out the statement that owing to a scarcity of coal in the markets of Duluth and other places in the Northwest, Montana has an opportunity to enter these markets and compete with the Eastern coals for a share of the business, conflicts with the report I made to you in December, 1915, with reference to a review of the coal industry of the State of Montana for 1915. The statement as coming from me is not true, having been made by an overzealous reporter who had seen the report of a shortage of coal at Duluth and other places in the Northwest and jumped to the conclusion that it would be beneficial to the coal industry of Montana.

I consider it unreasonable to think for a moment that Montana can enter those markets and compete successfully with the Eastern and Central States. It costs more to produce coal in Montana than in the East, partly due to the mining conditions not being as favorable and also to a higher rate of wages; and this fact, along with the distance from Montana to those markets, would make it impossible for her to enter those markets and compete successfully.

Should there be a shortage of coal in the Northwestern markets as stated, it could and would more than likely be taken care of by the coal-producing states in the vicinity of those markets. Though there was a reduction in the output of coal in Montana for the years 1914 and 1915, the state is in a prosperous condition.

*State mine inspector, Helena, Mont.

Feeding Mine Animals

The one thing about a mine of which the superintendent knows less than any other is the proper care of livestock. Sometimes the entire mining proposition is dependent upon the mules and horses, and in many cases where no such vital importance attaches, great inconveniences and unusual expenses are caused by failure of the stock at some critical time.

The proper daily allowance of forage for a horse is 12 lb. of grain and 14 lb. of hay. If a horse weighs over 1,300 lb., however, he should be fed 14 lb. of grain and 17 lb. of hay per day. For a mule 9 lb. of grain and 14 lb. of hay should be allowed.

These allowances are prescribed for United States Army animals, but it is not deemed necessary to feed all animals the full allowance of grain. Each animal should be watched while eating and should be fed accordingly, except that the full allowance of hay should always be fed; if it is of good quality and the animal is in good condition, it will always be eaten. Grain should never be fed to animals when they are tired, hot or excited.

If an animal continually fails to eat all of his allowance of grain, it should be cut down unless he shows signs of losing flesh; in that case he should be carefully watched and his mouth examined for lampas, and if he is found to be suffering from that cause, his grain should be soaked in warm water until soft. When changing grain, as from oats to barley or corn, cut down the grain allowance, returning gradually to full feed in about five days. During this period more hay should be fed.

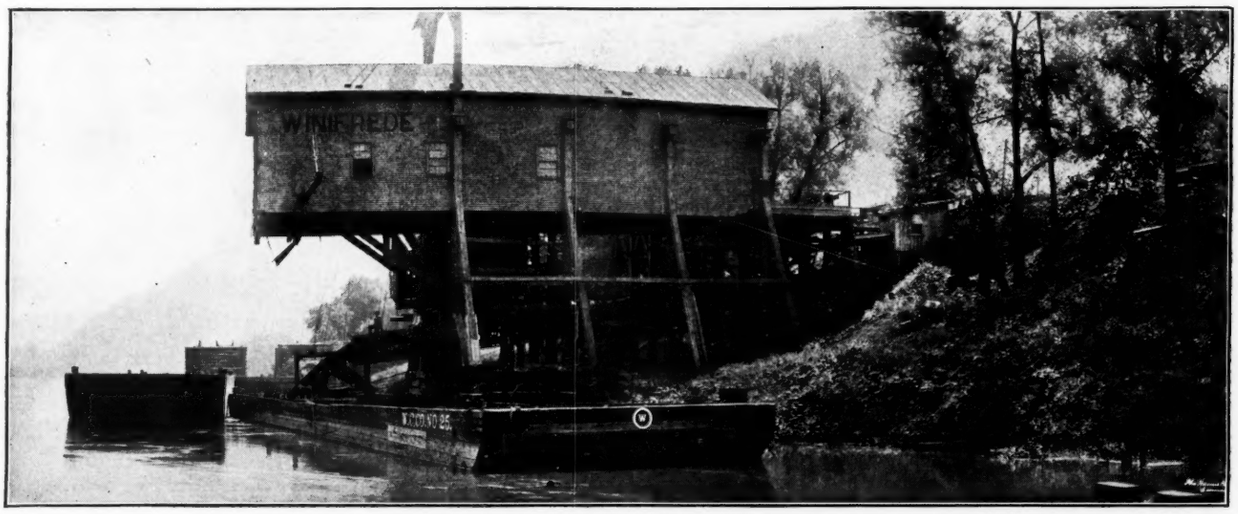
All animals need salt. The army allowance provides for 2 oz. per week per animal, which is sufficient to allow a handful to each animal every 10 days. It is better, however, to feed salt a certain day each week. Grain should always be fed before feeding hay. A mule will eat musty grain and hay, but a horse will not, and care should be exercised not to feed musty forage to either.

When mules, while pulling a load, fail to flap their ears, it is an indication that they are very tired. Mules which constantly flop their ears when working are in good condition. Proper grooming of the animals every day will do much to keep them in health and increase their pulling capacity.—*Engineering and Mining Journal.*

New Type of River Tipple

An interesting river tipple in which the principle of the loading boom has been applied was recently built and installed by the Winifrede Coal Co. at its loading station near Winifrede Junction, W. Va., on the Kanawha River.

Coal is brought in railroad cars to the tipple and dumped into a standard railroad hopper. An apron conveyor 36 in. wide, running at a speed of 60 ft. per min., drags the coal out from under the hopper at the rate of from 250 to 300 tons per hr., the flow being regulated by a baffle gate in front of the hopper opening. The apron conveyor has a total length of 112 ft. between centers, the end toward the river taking the form of a loading boom 35 ft. long between centers. This loading boom can be raised and lowered about 20 ft. to suit the water level of the river and the draft of the barge to be loaded. At the end of the loading boom there is a special combination discharge chute which is always held in position to discharge the coal at the proper slope no matter what the position of the door is and which by a system of fly valves operated from the loading platform distributes the coal evenly over the width of the barge.



WINIFREDE COAL CO.'S NO. 6 TIPPLE ON KANAWHA RIVER IN WEST VIRGINIA

Construction Details

The apron conveyor is driven by a 10-hp. electric motor through one belt and two gear reductions. The boom and attached discharge chute are suspended by four ⅝-in. steel-wire ropes leading over guide sheaves to a hoist provided with four drums. The hoist is driven from a 10-hp. motor through one belt and one worm gear reduction, producing a hoisting speed of 20 ft. per min. No brake is provided, as the worm drive is self-locking. The cut-steel worm meshing with a cast-iron worm wheel is entirely housed in and runs in an oil bath.

In order to move the barge into correct loading position a special barge-shifter mechanism has been provided. This consists of a hoist with two drums driven from a 10-h.p. motor through one belt and two gear reductions. The rope from each drum leads over guide sheaves to each end of the barge, so that it may be moved in either direction a speed of 25 ft. per min.

This river-tipple equipment was designed, built and erected by the Fairmont Mining Machinery Co., of Fairmont, W. Va. It has been in successful operation about 9 months, loading hundreds of barges at the rated capacity of 250 tons per hr.

Direct Sulphating*

The term "direct sulphating" designates the process by which ammonia and sulphur are simultaneously recovered from byproduct coke-oven gas to form ammonium sulphate without the use of sulphuric acid. By an impropriety in wording that has become habitual, the term "direct sulphating" is used when referring to processes in which only one product is recovered at a time.

At Lens the Koppers process, which is semidirect, was adopted. Here the coke ovens were old, and a very ordinary arrangement for sulphating was added to the recovery plant in which the circulation of the gases would allow the use of the process without important modification of the standard purifiers.

For this reason the processes of Otto and Koppers, the former direct and the latter semidirect, were adopted, as they offered facilities for such an arrangement. At Bourges the Felds process, which is direct, is adopted. A short description of this process is given because it is less known than the Otto and Koppers processes.

The gases from the coke ovens are washed with a solution of polythionate of ammonia. The sulphureted hydrogen and the ammonia react to give sulphate and hyposulphite of ammonium and also sulphur. The polythionate is regenerated by a current of sulphur dioxide in the solution of hyposulphite. The liquor is then gradually concentrated in sulphate of ammonia, and when the solution is rich enough in sulphate, a certain volume is drawn off and treated by sulphur dioxide. The liquor containing some sulphate, polythionate and a little quantity of hyposulphite is then warmed, causing it to decompose, giving sulphate, sulphur dioxide and sulphur.

By filtering, the sulphur is recovered and returned to the cycle as SO_2, and the solution of sulphate is evaporated to crystals, which are then drained and dried.

*Translated from "Glückauf," Jan. 16, 1913.

Uniform Mine Legislation--I

SYNOPSIS—The following brief abstracts give the more important points brought out in the discussion of uniform mining legislation by members of the Mine Inspectors' Institute, U. S. A., in attendance at the eighth annual meeting held in St. Louis, Mo., June, 1915. Free copies of the proceedings of the institute can be secured by writing the secretary, J. W. Paul, Experiment Station, Pittsburgh, Penn.

The difficulty that confronts our legislatures most frequently is that they receive many suggestions and demands from the labor union and others from the associations of coal operators, and these demands are often antagonistic and consider only their individual purposes. In this regard there is frequently as much blame attaching to the operators as to the miners. It will be readily admitted that there is danger in the practice of lobbying, but it has been argued justly that it is necessary to inform legislators who are generally unacquainted with mining conditions and must be instructed in regard to what is necessary to secure the best interests of those engaged in mining.

Now, in regard to uniform mine legislation, there are numerous points common to the mining of coal in every state that should be covered by the mining laws. For example, mining laws should deal in specific terms when describing conditions in mines and making certain requirements. There is a great lack of clearness in the mining laws of some states. The term "gaseous mine" is used in a very general way. Mining laws should make such a classification as will clearly define what is meant by a gaseous mine. There are conditions when 1 or 2 per cent. of gas is not dangerous, while under other conditions such a percentage of gas would be highly dangerous, and the working of the mine would require the taking of special precautions. For this reason it is important that every mining law on this question should clearly state what is meant by a gaseous mine.

Another question, and a more generally uniform question, is one relating to the certification of mine officials. Many of the coal-mining states require no certification of mine officials, while other states require a rigid examination to obtain the necessary certificate of competency issued by regularly appointed examining boards. It is important to understand, first, if certification of mine officials should be required by the state; and, second, to set a standard of qualifications that should be required in order to make a candidate eligible to appointment to the positions of mine foreman, fireboss, and hoisting engineer. It would be well, also, to discuss the question of whether the mine superintendent should be required to pass an examination for a certificate of competency.

The question of an interstate certificate, also, is an important one. At the present time the standards of examination set in the different states vary so widely that few state examining boards will accept a certificate of another state in lieu of an examination of a candidate for certificate in their own state. This necessitates a competent man who has filled the office of mine foreman, or fireboss, or other position in one state and holds the necessary certificate of competency for that state, if he desires to apply for a similar position in another state, to again go before the examining board and pass another examination; whereas, if an agreed standard of examination was fixed, determining the necessary qualifications, in accordance with certain specified conditions in the mine, this difficulty could be overcome with a saving of time and expense to the state.

I believe, Mr. President, much can be done toward securing uniformity on many of these points and establishing fixed standards that would be uniform in this country. I believe, Mr. President, that this Institute has a great work to do along that line. Let us seek, by discussion, to find out the points and ascertain the conditions in regard to which our mining laws should be uniform, and then let this Institute strive to bring these points to the attention of legislators and governors in the different states.

To this end I would suggest that it would be well to consider the appointment of a committee that understands the views of the Institute and who would confer with the Bureau of Mines in reference to securing greater uniformity of standards, in respect to the classification of mines in accordance with various conditions and to consider what degrees of competency are required to insure the greatest safety in mining operations.—J. T. Beard, New York.

Mr. Paul (Pennsylvania)—At the Indianapolis convention, at the organization of this Institute, in 1908, and the adoption of a constitution, one of the chief purposes of the organization was stated to be that of bringing about uniform mine legislation. A committee was subsequently appointed and made a report upon certain features in which uniformity should be sought, but these dealt principally with matters of statistics.

I feel that many regard this Institute as a guide in matters of this kind, and it is our duty to take up this question in a practical way. We should discuss whether or not the Institute considers it advisable to go into a study of the conditions of mining, as the result of which a bill might be drafted and recommended to the different coal-producing states for adoption. Until this question is decided, we are not in a position to discuss these matters intelligently. We should first consider what are the questions in reference to which it would be desirable to adopt certain uniform laws, and when that has been decided, this Institute would be in a position, through its various officers and committees, to coöperate with state mining departments and the Federal Bureau of Mines, and through such coöperation it might be expected that suitable and effective measures might be drafted for presentation to state and national legislators.

Mr. Flynn (Alabama)—This question of uniform legislation is one of the most difficult that we have to handle under our form of government. All states guard zealously what they view as their state rights. Considered from a mining standpoint, it is unfortunate that states are not more willing to coöperate on these general questions. It would probably be claimed in Alabama that they have a right to enact their own laws without suggestions from Pennsylvania or other states, and I suppose the same would be claimed by other legislators.

While I am a great believer in state rights, I see no reason why we cannot have uniform legislation on many points and secure eventually interstate mining certificates

of competency. A lawyer licensed to practice law in one state, on going to another state is required only to present his license to the Bar Association of that state to be enabled to carry on the same practice wherever he goes. A license to practice law in Alabama is good in any other state. The same is true in medicine—the practicing physician going from one state to another presents his license to the head of the medical society, or department, and is then free to practice his art in that state also. This is not the case, however, in respect to a mine foreman's certificate of competency. As far as I know, no effort has ever been made to secure the adoption of an interstate certificate law in reference to coal-mine officials. The provision is made, however, in Alabama, that a mine foreman holding a certificate from another state is permitted to act as mine foreman in Alabama until the meeting of the next examining board.

Mr. Starks (Illinois)—I want to say a word in regard to the interchange of certificates of competency between different states. The objection to such an interchange of certificates would arise from the fact that the standards of examination in some states are more difficult than those in others. Some examining boards place more emphasis on the practical side of mining, while others place greater emphasis on technical questions in mining. Again, some examiners are easier in the examination of candidates than are others. The position of mine manager (foreman) in Illinois is well paid. I believe they average about $150 per month, while in adjoining states, the same position pays anywhere from $110 to $175 per month. I believe the mine inspectors of Illinois would fight this question of interchange of certificates to the last ditch, for the reasons I have given. I think it would be difficult to frame a law that would be acceptable to all in this regard.

Mr. Flynn—In reply to what Mr. Starks has just said, I want to say that the examination, whether practical or technical, depends much on the mathematical training of the board members. While I do not consider that a mine foreman must be able to answer all the technical questions asked, in order to prove his competency to manage a mine safely, I think if he knows these questions, and is able to answer them, it is better for him. That is one reason why I think we should have an interchange of certificates and a more uniform standard of examination.

Mr. Beard—I regret that this discussion has brought out some remarks in reference to state rights, and others in regard to the protection of mine foremen within their own state from candidates from other states coming to take their places. All of these questions tend to antagonize instead of fostering the get-together spirit that should prevail. The one point that we want to bear in mind is: Forgetting ourselves—our own interests and our own rights—strive to solve the question of what is for the best good and what will produce the greatest safety in mining operations.

In discussing uniformity in mining laws, I do not think, gentlemen, that we should enter on details, or question the right of every board to formulate its own questions and set up its own standard of conducting the examination. In striving to secure greater uniformity in a few essential points in mine legislation, let us lay aside the question of detail, which can be adjusted afterward. The chief question is what constitutes the safe operation of mines under certain specified conditions.

May I ask again that before adjourning this year, we may have a committee appointed that will work in accordance with the suggestions of this Institute and in harmony with the Federal Bureau of Mines, to the end that laws may be drafted on points we may deem essential to safe mining. Or let the committee outline their suggestions for action next year. Let us do something. Let us not meet here for entertainment or for social purposes only, but let us get together as men who are interested in the safe operation of mines.

Mr. Roderick (Pennsylvania)—In my opinion, uniform mine legislation is an impossibility. Take, for instance, the State of Pennsylvania. It is governed by two sets of laws—one for the anthracite and another for the bituminous region. The anthracite laws could not be applied to the operation of the bituminous mines; neither could the bituminous laws be applied to the operation of the anthracite mines. Now, if it is impossible to apply a uniform code of laws to the mines in a single state, how can it be expected to frame a law adapted to the operation of the mines in all states where the conditions are very different?

There is always much difference of opinion as to what should be included in a code of mine laws. It may be possible to adopt a uniform code of laws in a country under a single government; but in a union of states, each having its own form of government, but united under a Federal government, such as ours, there are bound to be the state rights mentioned by Mr. Flynn. The points suggested by Mr. Beard, in regard to which there could be uniformity of the state laws, are comparatively few. I believe that the mining laws of every state must deal with its own conditions.

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The entire problem of mine ventilation has now been carefully studied, and in many instances the amount of air necessary is regulated by law. This has reduced the danger incident to earlier mining methods to such a degree that the average miner's work is now far less hazardous than is generally appreciated. Recent statistics show that slightly more than 1 per cent. of mine accidents are caused directly by a lack of sufficient ventilation.

The working conditions in a modern mine are well regulated. This applies particularly to ventilation. Furthermore, the more progressive companies are now holding in reserve at accessible points portable emergency mine-ventilating sets consisting of small fans direct connected either to a steam turbine or a high-speed motor. Some of these sets, consisting of two double-width, double-inlet blowing fans, are designed for as much as 150,000 cu.ft. of air per minute against a pressure as high as 4 in. of water gage. The discharges from such double fans are united into one rectangular connection which may be attached to a suitable hole cut in a bulkhead, door or stopping.

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Those familiar with mine operations will readily concede that the control of air-regulating apparatus, such as brattices or stoppings, overcasts and doors, especially those between the intake and return aircourse, may contribute directly and with equal importance to successful and economical results quite as much as does any great care in the original design of the mine-ventilating system.

However uncertain may be the lines along which development may proceed in a new mine, yet in the replacing of an older fan system on a well-developed operation, the engineer has more complete knowledge of the aircourses,

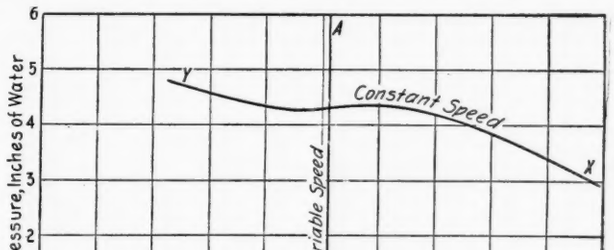

FIG. 1. VOLUME-PRESSURE CURVE OF MINE FANS

where they are definitely disposed either in parallel or for the most part in series. These are conditions which he must know in order to judge intelligently of future requirements.

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These conditions immediately suggest the desirability of installing a fan whose characteristics lend themselves to increased volumes for relatively the same mine pressure.

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of competency. A lawyer licensed to practice law in one state, on going to another state is required only to present his license to the Bar Association of that state to be enabled to carry on the same practice wherever he goes. A license to practice law in Alabama is good in any other state. The same is true in medicine—the practicing physician going from one state to another presents his license to the head of the medical society, or department, and is then free to practice his art in that state also. This is not the case, however, in respect to a mine foreman's certificate of competency. As far as I know, no effort has ever been made to secure the adoption of an interstate certificate law in reference to coal-mine officials. The provision is made, however, in Alabama, that a mine foreman holding a certificate from another state is permitted to act as mine foreman in Alabama until the meeting of the next examining board.

Mr. Starks (Illinois)—I want to say a word in regard to the interchange of certificates of competency between different states. The objection to such an interchange of certificates would arise from the fact that the standards of examination in some states are more difficult than those in others. Some examining boards place more emphasis on the practical side of mining, while others place greater emphasis on technical questions in mining. Again, some examiners are easier in the examination of candidates than are others. The position of mine manager (foreman) in Illinois is well paid. I believe they average about $150 per month, while in adjoining states, the same position pays anywhere from $110 to $175 per month. I believe the mine inspectors of Illinois would fight this question of interchange of certificates to the last ditch, for the reasons I have given. I think it would be difficult to frame a law that would be acceptable to all in this regard.

Mr. Flynn—In reply to what Mr. Starks has just said, I want to say that the examination, whether practical or technical, depends much on the mathematical training of the board members. While I do not consider that a mine foreman must be able to answer all the technical questions asked, in order to prove his competency to manage a mine safely, I think if he knows these questions, and is able to answer them, it is better for him. That is one reason why I think we should have an interchange of certificates and a more uniform standard of examination.

Mr. Beard—I regret that this discussion has brought out some remarks in reference to state rights, and others in regard to the protection of mine foremen within their own state from candidates from other states coming to take their places. All of these questions tend to antagonize instead of fostering the get-together spirit that should prevail. The one point that we want to bear in mind is: Forgetting ourselves—our own interests and our own rights—strive to solve the question of what is for the best good and what will produce the greatest safety in mining operations.

In discussing uniformity in mining laws, I do not think, gentlemen, that we should enter on details, or question the right of every board to formulate its own questions and set up its own standard of conducting the examination. In striving to secure greater uniformity in a few essential points in mine legislation, let us lay aside the question of detail, which can be adjusted afterward. The chief question is what constitutes the safe operation of mines under certain specified conditions.

May I ask again that before adjourning this year, we may have a committee appointed that will work in accordance with the suggestions of this Institute and in harmony with the Federal Bureau of Mines, to the end that laws may be drafted on points we may deem essential to safe mining. Or let the committee outline their suggestions for action next year. Let us do something. Let us not meet here for entertainment or for social purposes only, but let us get together as men who are interested in the safe operation of mines.

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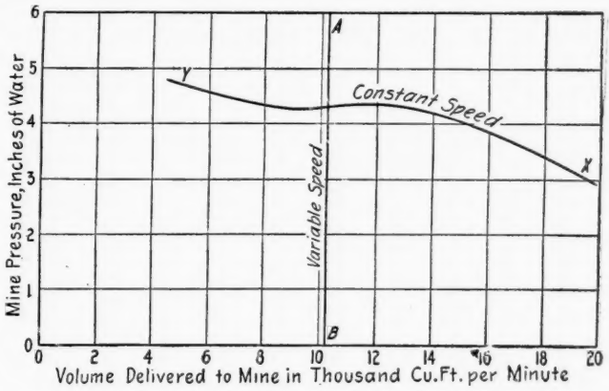

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This fan is of ample size for present demands. It is working at a point on the volume-pressure curve shown by *Y* before the changes are developed, as indicated. By increasing the equivalent orifice, the volume line extends nearly horizontal and indicates no increase in the static pressure to the point *X*. The fan from which this characteristic curve was taken was built by the B. F. Sturtevant Co. and appears to be particularly well designed for fixed speed and pressure, with varying volume at high points of efficiency. This feature is also found in the fans built by the Buffalo Forge Co.

It is usually advantageous to equip gaseous mines with a sucking or exhausting fan, and such a machine is usually preferable under most circumstances, except possibly where the formation of ice in the downcast or intake may become a menace.

It is difficult to embrace the greatest saving of power, both blowing and exhausting, by the use of an évasé chimney, but fan lines may lend themselves to the use of such air expansion, so that the gain in mine pressure is almost as great for the blowing as for the exhausting fan. In two recent tests the évasé expansion has played a part seldom shown in the older form of fan design.

It was evident from readings that were taken at the mine that the fan at the proper speed and pressure gave much less than the volume required by the specifications.

The engineers were also aware that should the orifice be increased—that is, a cross-connection be opened to

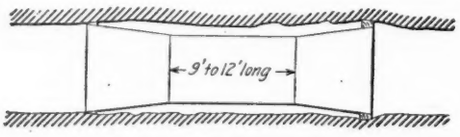


FIG. 2. ARRANGEMENT EMPLOYED FOR OBTAINING VOLUMES OF AIR DELIVERED

the downcast—a greater volume ordinarily would flow and the mine pressure would drop further below that specified. Furthermore, the resistance offered to the flow would be lessened.

This was not the case, as it proved with fan characteristics similar to those shown on the accompanying *YX* curve having a well-designed évasé chimney, since the efficiency of such a chimney remains practically constant; that is, an equal percentage of recovery (60%) is made of the available change in velocity pressure at the entrance to the chimney and the discharge from the same for all volumes flowing. Therefore, there was a larger actual pressure saved with the increased volume flowing through the chimney than with the less volume.

This increased saving of pressure becomes available in the mine pressure, which simultaneously is increased, maintaining a greater flow throughout the mine. The fan showed its ability to handle even excess volume at the specified mine pressure.

With the fan carrying an overload, considerably to the right of the point *Y* on the curve, this increase in the mine pressure is no longer possible. The pressure begins dropping off with this overload volume handled by the fan. This is merely a question of meeting a guarantee on an undeveloped mine where the fan size and capacity are much in excess of the present mine needs.

In most mines a ventilating fan is needed which will give increased volumes at increased mine pressures. These volumes are not proportional to the square root of the mine pressure, as the mine becomes more extensive; but for a given operation the volume delivered is proportional to the square root of the pressures maintained at the fan discharge, or intake if an exhaust fan is employed.

To Increase Pressure, Increase the Speed

In order to maintain the same volume against increased mine pressure, it is customary to run the fan at increased speed. Alternating-current motors of standard design are not adapted to this condition. A design of motor that allows a change in speed by gradual steps with high efficiency, such as the type PCS, form R, built by the General Electric Co., or those of similar design of other makes, has been tried out and found to work quite satisfactorily. For such applications the fan shown on curve *AB* is best adapted to general mine installation for alternating-current motor drive. This fan gives increased mine pressure with practically a constant volume delivered. The fan can be installed with the évasé chimney and is of the reversible type, while its characteristics hold equally true either forcing or exhausting. The efficiency curve of this fan is such as to give a slightly increased mechanical efficiency as the pressures are increased from B to A. At the maximum this is approximately 75 per cent.

The problem of fan selection is one to be well considered in the light of the particular mine to be ventilated, and it is becoming common practice to test fans before as well as after installation, duplicating as nearly as possible the airway in the mine and using sufficient instruments to test accurately the performance of the fan throughout its working range.

This entails some expense, which without doubt can be easily saved in operating cost by applying the fan at the point of highest efficiency obtained from such detailed tests. The high working efficiency, often reported in excess of 70 to 75 per cent., is one based without doubt upon careful tests, but under such conditions that inflated and erroneous results creep in in spite of considerable vigilance.

In this regard one can see a most excellent arrangement in the suggestions for mine tests outlined in a German publication of 1912 entitled, "Rules for Testing Ventilators and Compressors," compiled by the Society of German Engineers, which gives a sketch shown in Fig. 2, suggesting one of the most careful arrangements for obtaining the volume delivered to the mine, which leaves no doubt as to stream lines and sectional area so necessary in using the anemometer. Although such measurement is important, it is perhaps no more so than the velocity determination at the working face.

Could we use such a device, we would be more nearly able to check the results obtained under test-plate conditions and give the engineers and owners a better check upon the study now being made of the most efficient means of ventilating mines.

Employment of Minors in West Virginia—Since the statutes of West Virginia permit employment of boys more than 14 yr. old in coal mines, such employment does not render an operator liable for injury not resulting from negligence. "It is the nonassignable duty of the owner or operator of a coal mine, not of his mine foreman, to maintain his motor track, motor and other appliances with which his servants are required to work in a reasonably safe condition, and failing therein, resulting injury to an employee constitutes actionable negligence." (West Virginia Supreme Court of Appeals, Gray vs. Pocahontas Consolidated Collieries Co., 85 Southeastern Reporter, 551.)

Mining by Concentration Method*

By W. H. Howarth†

SYNOPSIS—The method of mining here described has been successfully employed for some years in the Pittsburgh district. It was developed by practical men and has proved in many respects superior to prevailing systems of coal extraction.

The "concentration method," also known as the "block system" of mining, was originated and put into operation during the year 1910 at the Bridgeport mine, operated by the H. C. Frick Coke Co., at South Brownsville in Fayette County, Penn., by Patrick Mullen, inspector of mines for the company; W. C. Hood, superintendent, and Jacob Gates, mine foreman of the Bridgeport mine.

The method, which has been successfully worked for about 5½ yr., was partly a result of discussions on new mining methods by the members attending the meetings

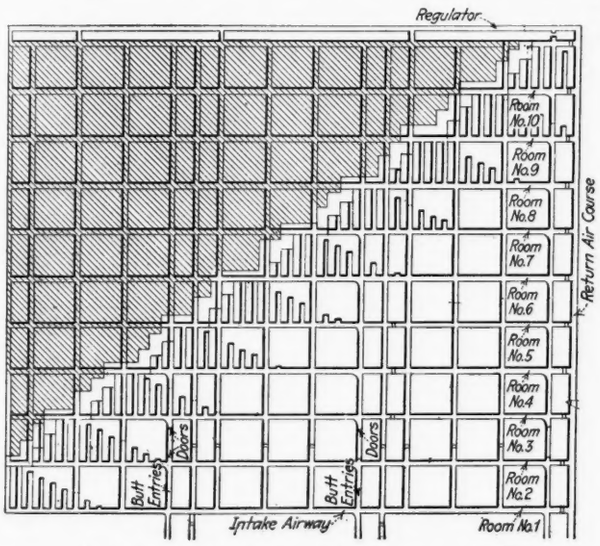


FIG. 1. LAYOUT OF A PANEL OR BLOCK

of the Brownsville Mining Institute, in which great interest was manifested. Much credit is due Inspector Mullen, not only for having improved and perfected the system to suit other H. C. Frick Coke Co. mines in which it has been introduced, but also for the efficient organization of the workmen necessary to insure success in the operations.

In the Pittsburgh and Connellsville districts great interest has been taken during the last five or six years in trying to improve the systems of mining. For some time it has been realized that old methods are faulty and do not give satisfactory results. This is partly on account of the mining operations being extended over a large area, because of overdevelopment, which causes the workmen to be scattered over a wide territory with a resultant depreciation in efficiency and a greater cost for supervision, upkeep of haulageways, timbering, drainage, ventilation and transportation, for cars and materials for the operation of the mines. It is also partly owing to the lack of sufficient forethought and planning, especially in advance work within the panels, in driving wide rooms and leaving comparatively small pillars indiscriminately, causing the pillars to crush and squeeze and creating dangerous roof conditions with consequent loss of a large percentage of pillar coal, greater cost for timbering and "dead work" and a material restriction of the daily output of the mine.

Several operators have employed experienced, practical, expert mining men, specialists in this line, to improve and systematize the mining methods and to secure a thorough organization of the workmen with the idea of attaining the highest possible efficiency for workmen and equipment, the recovery of a maximum percentage of the coal, together with greater safety for the employees by the most economical methods.

Longwall Working Is Impracticable

Longwall methods, advancing or retreating, or a modification of longwall, have been frequently advocated as ideal systems. But for operations in the Pittsburgh coal seam it is generally conceded that they are impracticable. It would be a needless expense in a thick bed of coal to substitute artificial supports for maintenance of roadways or at the working face, when natural pillars can be utilized with greater advantage and economy.

For general development of a medium or large acreage the panel system, worked by the pillar-and-stall method, is generally approved as best adapted for mining the Pittsburgh coal bed.

The most suitable plan for general development or layout of the main entries, flat entries and cross entries of a mine to divide the acreage into panels must be largely determined by each individual operator after due consideration of the size and form of the available acreage, the conditions relative to the location of the mine entrances, elevations, drainage and transportation and the proposed method of mining and ventilation.

Panels formed and circumscribed by the main entries are usually in the form of an oblong block from 1,200 ft. to 1,500 ft. in width on the butt of the coal seam and of such length as may best suit convenience.

Preparations for the concentration method or block system of mining are made in advance by subdividing the panels into blocks 90 ft. square (see Fig. 1). Double butt entries on 50-ft. centers, 10 ft. in width and 1,200 ft. in length, are driven in parallel across the panel with cutthrough connections every 100 ft. Other and similar pairs of double butt entries are driven at distances 350 ft. apart, dividing the panels into oblong blocks of 350 ft. in width by 1,200 ft. in length and the chain pillars between the double entries into blocks of 40 ft. in width by 90 ft. in length.

The 350x1,200-ft. oblong blocks are then subdivided into blocks 90 ft. square by driving rooms 10 ft. wide and 350 ft. long at right angles to the butt entries, the rooms being connected by cutthroughs at distances of 100 ft. apart. In this manner a whole panel can be developed and prepared to a reasonable distance in advance for the work of concentration in quickly withdrawing the pillar coal.

*Paper read before the Coal Mining Institute of America, Pittsburgh, Penn., Dec. 22, 1915.

†Inspector of mines, 16th Bituminous District of Pennsylvania, Brownsville, Penn.

Fig. 2 illustrates the concentration method, showing a part of a section when in full operation as worked in the mines of the lower Connellsville district. This shows the coal in 90-ft.-square blocks and oblong pillars 15 ft. by 90 ft., also the entries, rooms, crosscuts and cutthroughs. The section shown crosshatched represents that portion from which the coal has all been withdrawn and the overlying strata have subsided, or the "gob" section.

The air current, indicated on the map by arrows, enters by way of the second butt entry, which is also the haulageway, where it is deflected by double doors placed between the second and third rooms on the butt entry into the first and second rooms and through the last cutthroughs to the crosscuts and pillar workings. Thence it traverses the gob falls, sweeping the gases given off in the falls, through the opening at the back, which is called the gas bleeder, or gas drain, into the return airway, which is the first butt entry.

The ventilation is by the pressure system, which allows the whole ventilating pressure, as exerted on the air by the fan, full play on the gob falls, the quantity of air being controlled by the regulator which is located on the return airway.

By this system of ventilation the gob falls are kept clear of gases with a minimum amount of air, which allows a larger quantity of air for the ventilation of other sections of the mine.

By any other means a much larger quantity of air might be used to freely sweep the edges of the gob only, leaving the space above the falls full of gas, which on the least interruption of the air current, by a fall of rock or otherwise, might be suddenly forced out and fill the workings with gas.

This section of coal is developed by driving on the right hand side a pair of butt entries, 10 ft. in width, 500 ft. in length, on 50 ft. centers and connected by cutthroughs every 100 ft. Rooms 10 ft. wide and 350 ft. long, on 100 ft. centers, are driven at right angles to the butt entries, the rooms being connected by a straight line of cutthroughs at distances of 100 ft. apart for ventilation. Thus, the room pillars are divided into 3½ blocks 90 ft. square, as shown on the plan in preparation for the final operations of driving the crosscuts and the withdrawal of the pillar coal.

A Proper Starting Point Is Important

The selection of the place to commence on the pillar work is important and must be determined by the persons directly interested largely from the local conditions—such as the inclination or pitch of the coal bed, convenience of transportation or haulage, the size, area or extent of the panel or section available for operations or the required daily tonnage.

We are now ready to proceed with the real or essential part of the concentration work. It will be noticed on the map that we have begun the pillar work at the end of the last room, which was in the upper left-hand corner of the plan. Each room having been divided into 3½ blocks, 90 ft. square, we have worked out almost three and a half blocks from the last, or No. 5 room; nearly one and a half blocks from No. 4 room; one fourth of a block from No. 3 room and have started crosscuts in No. 2 room. This makes the angle of the gob line about 45 deg. with the butt entry.

The plan shows that the pillar work of each room is 75 ft. in advance of the pillar work or gob fall of the room following. The room pillars are kept in this position for the purpose of breaking the roof falls in the advancing pillars and offering more resistance to thrust caused by the breaking of the strata; also for the purpose of affording better protection against crushing in the pillars of the room following.

The system so far as this pair of butt entries is concerned is now in full operation. The pillar work or gob line, however, may be, and often is, extended across several pairs of butt entries (see Fig. 2), leaving an offset of about 75 ft. as a breaker at each pair. In this manner the gob line may be extended clear across the panel at an angle of 45 deg. or even at 35 deg.

The work on this plan was commenced at the top of the last room in the block, which was in the upper left-hand corner of the map. New crosscuts were started at intervals of two days, thus making each crosscut two days' work, or about 12 ft. in advance of the one following,

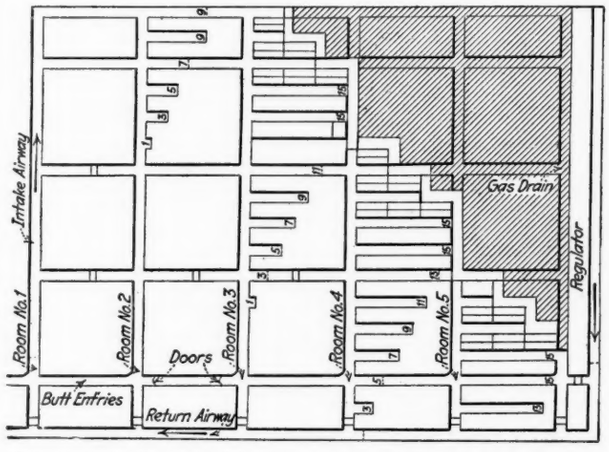


FIG. 2. THE CONCENTRATION METHOD IN OPERATION

until the crosscut first started has been driven through the 90-ft. block, for which I have allowed 15 days at 6 ft. per day.

The crosscuts being 10 ft. in width and turned off the rooms at distances of 25 ft. between centers makes the pillars, for the final operation, 15 ft. in width and 90 ft. in length. These pillars are divided and subdivided by lines drawn across and lengthwise of the pillar. The cross division lines divide the pillar into three sections of 15x30 ft. each—the amount of coal to be taken out in one fall by three or four men working two days—which makes three falls to each pillar in six days' work, as shown.

Three of these pillars in each room are being worked at the same time and are started at intervals of 2 days, thus placing each pillar two days' work, or 30 ft. in advance of the one following.

The proper time to start the first crosscut at the top of the next room in order that the 75-ft. offset may be maintained can be ascertained as follows: It takes 15 days to complete the first crosscut at the top of the last room, six days to withdraw the pillar, two days to finish the next pillar and two more days to finish the next one, making a total of 25 days to complete the withdrawal of the three pillars or cover a horizontal distance of 75 ft. Therefore, by starting the first crosscut in the next room

10 days later, the offset of 75 ft. will be maintained as shown on the plan.

By continuing the work on this schedule, leaving intervals of 2 days between the starting time of each crosscut and 10-day intervals between the starting time of the crosscut in the next room, we shall have three room pillars of 90-ft. thickness retreating in a diagonal line on each pair of butt entries and three of the crosscut pillars in each room pillar or 9 working places when in full operation.

The Estimate of Daily Tonnage

In estimating the amount of daily output we can expect from this section, we have in operation 15 crosscuts and 9 pillars. Allowing one man in each crosscut and three men to each pillar makes a total of 42 loaders. The coal being undercut to a depth of 6 ft. by the mining machines, we have for the tonnage of each crosscut 6 ft. undercut, 10 ft. in width and 7 ft. in height of seam, or 6x10x7 = 420 cu.ft. Allowing 80 lb. to each cubic foot and 2,000 lb. to the ton, we have $\frac{420 \times 80}{2,000} = 16.8$ tons, and 15 crosscuts equals 16.8×15 or 252 tons. Assuming a two-ton car, this gives us $252/2 = 126$ loaded cars.

From the 9 pillars we have 6-ft. depth of undercut, 30 ft. in length of pillar and 7 ft. in thickness of seam, or $\frac{6 \times 30 \times 7 \times 80}{2,000} = 50.4$ tons, and for 9 pillars, $50.4 \times 9 = 453.6$ tons, or 226.8 2-ton loaded cars, which makes the total number of tons from the whole section $252 + 453.6 = 705.6$ tons, or 352.8 loaded cars from 42 loaders—an average of 8.4 cars for each loader.

This average may seem rather high until we take into consideration the facilities afforded by the concentration method and the preparations made to enable the miner or loader to attain a high efficiency.

During the previous night all working places are undercut to a depth of 6 ft. by mining machines. The shot holes are drilled with power drills by men employed especially for that purpose and are charged, tamped and fired by shotfirers using permissible explosives, clay for tamping and electric batteries for firing.

By this system each miner, when he arrives at his working place, has about 8 or 9 carloads of loose coal, which he can at once begin to load, provided no unusual difficulties arise to prevent him. He is kept constantly supplied with empty cars by the driver, who can also attain a high efficiency by reason of having his men—the loaders—within a comparatively small area and only a short distance from the side track and the tracks kept in good condition and laid with steel rails, even in the miners' places.

The trackmen, timbermen and laborers are also enabled to do more effective work, as there is no lost time in traveling long distances from place to place. For the same reason much better supervision can be given by mine foreman, assistant mine foreman and firebosses to the workmen and working places. They can make frequent visits and keep in close touch with the workmen and other matters influencing the success of the operations—such as the machinery, transportation or haulage, ventilation, trackmen and laborers, timbering and timbermen, miners and drivers—and see that defects interfering with work or causing delays are remedied immediately.

Systematic timbering is of great importance in the concentration method, especially in the working places at the face, where timber must be set at regular distances apart as the miners' places advance, the benefit of which will be derived on retreating with the pillar work.

The rules approved by the chief of the Department of Mines must be strictly complied with, not only for the safety of the workmen, but also to insure the success of the system.

Preparedness in mining as well as in military operations is of vital importance. Preparedness consists of carefully planning for the general development of the mine, in adopting the most effective system of mining with a view to the safety of the workmen and the ultimate recovery of a maximum percentage of the coal seam, in securing an efficient organization of mine officials and workmen, in systematic timbering, with an ample supply of materials for the safe operation of the mine, in providing adequate power and means for good ventilation and in the general equipment of the mine for transportation of the coal from the workings to the surface.

Preparedness further signifies keeping the mines in good sanitary condition, making provisions to promote the health, welfare and safety of the employees and being ready to take an active part in the educational work of local, state or national coal-mining institutes for the benefit and uplift of the mining fraternity.

Extracts from a Superintendent's Diary

In the small town in which I grew up everybody knew every other body and every other body's grandfather, or else had heard of him many times at first hand from someone that had known him. Almost everyone lived in the house in which his grandfather had resided, and very often even his great-grandfather had lived and died there. A family that had occupied more than one house in a lifetime was almost a curiosity. Naturally everyone knew the life history of every other one, and the smallest event was interesting to all the inhabitants, not necessarily because of the event itself, but because of the numberless things that it suggested of past history, involving quite frequently many different families.

What a contrast to the mining village in which I now live. Almost nothing but gossip is indulged in, not because gossip is more pleasing to these people than to other people, but because no one knows enough about anyone else to quicken interest in any ordinary recital of facts. Our citizens are residents of a small town, yet in one way they resemble the dwellers of the cities. There is not a 12-year-old child in our camp today who is now living in the house in which it was born, and it is doubtful if there are a dozen families in the settlement that have been acquainted with any of their neighbors through as many as a dozen years.

I was reminded of this today by a young newspaper reporter who came into camp to write up some of the human-interest stories that are supposed to go a-begging around all mining camps.

"Why are you city fellows always hankering after human-interest stories?" I asked him, and he replied that the newspaper men who could make anything other than a human-interest story interesting to average city folk these days had all disappeared. It takes pages and

pages to get in the required amount of ancient history to make the simplest statement intelligible, and editors claim that space is too valuable; and even at that, only a limited circle is interested in any one tale.

The young reporter found a story, but is was not the kind of story that he had expected. It occurred to him after he had wandered about the camp for several hours, chatting with our men, women and children, that a description of our village life without exaggerations of any kind would make a very fascinating human-interest story, and he had decided upon its title before he left for town. He is to call it "The Village That Is Not a Village."

He talked to a widow whose four dead sons are buried in four corners of the globe—soldiers of fortune who wandered away from home, covering their tracks as they went only to be heard from again, one by one, as they met violent deaths. The father disappeared years ago, following a shooting scrape between strikers and strikebreakers. The reporter learned these facts from the widow herself, because he knew the art of interviewing; many stories had been circulated at different times to account for the whereabouts of this woman's family, and yet the reporter was the first one to learn the truth.

He spoke of her as a stranger in her own land. But she has one consolation as he saw it—no one can remark that her husband followed in the footsteps of his father, because no one knows the first fact about the man's father, and they can't say that all of this affliction has been given her because of the way that she neglected her parents or some of her kin, for the same reason.

People living so close together and yet remaining strangers in fact was the thought that suggested the reporter's story.

The Bureau of Mines in 1915

By Van H. Manning*

SYNOPSIS—A summary of results obtained by the bureau in 1915 along lines of safety and efficiency. Coal dust, portable electric mine lamps, breathing apparatus and electricity were investigated carefully, while explosives were the subject of minute research.

The year just brought to a close has been marked in a very gratifying manner by a still closer coöperation between the Bureau of Mines, the coal mine operators, state mine inspectors and that great army of nearly three-quarters of a million miners. It seems, from what we of the Bureau of Mines have observed, that there is a steadily increasing better understanding between all parties concerned as to just what the bureau is endeavoring to do in its movement for safety first, with a corresponding increase in mutual effort.

The results, I am happy to state, are now beginning to show in a substantial manner in decreases in the number of lives lost in coal mining. While I do not have the complete fatality figures for the year 1915, I have every reason to believe they will show the smallest number killed in any year since 1907, and likewise the smallest death rate per 1,000 men employed. The improvement during the last three years has been remarkable. With an estimated number of 2,200 killed for the year 1915, the statistics for the three years will be as follows:

Year	Number Killed	Death Rate per 1,000 Employed
1913	2,785	3.73
1914	2,454	3.22
1915 (estimated)	2,200	...

The figures giving the number of men employed in coal mining in 1915 are not yet at hand, and it is therefore impossible to give the death rate per 1,000 employed, but it is known that slightly more coal was produced in 1915 than in 1914, which would indicate more men employed and therefore a decreased death rate below 1914. The Bureau of Mines makes no claim to having been the first agency to call attention to the high death rate among miners, nor does it claim it was the first to urge the need of safer methods. It has gladly welcomed the aid of all agencies that have sought to better conditions, and it freely concedes the credit that is due them for what they have done. The bureau does claim, however, that its work has served to stimulate a nation-wide movement for greater safety in all industries and that the value of this work cannot be measured in dollars.

*Director of the United States Bureau of Mines, Washington, D. C.

Tests of Coal Dust

During the year L. M. Jones, mining engineer, under the general supervision of George S. Rice, chief mining engineer, carried on a series of explosion tests at the bureau's experimental mine at Bruceton, Penn. The results promise to be of great value. The main feature of this work is standardization of the methods by which the inflammability of coal dust from typical coal mines is tested, with and without the presence of firedamp, and by which the amount of rock dust or other inert matter that must be added to make the coal dust safe is determined with reasonable precision. Such direct information enables operators to know what is needed to make their mines reasonably safe from explosions.

In connection with these tests rock-dust barriers, for stopping explosions, designed by the chief mining engineer were tested. Several of the barriers designed during the preceding year were modified to make them more effective. Also, a new barrier was designed which proved successful in many tests. Application for patents covering the barriers has been made, and the patents, if granted, will be dedicated to the public.

The engineers of the experimental mine, in coöperation with the Pittsburgh Coal Co., began a test to determine the efficiency and cost of rendering coal dust inert by rock dust in a commercial mine. About 2,000 ft. of entry in such a mine was sprinkled with limestone dust and was inspected every two weeks by one of the bureau's engineers to determine to what extent the rock dust had been contaminated by coal dust and to arrange for further rock dusting if necessary. The results so far indicate that unless much coal dust is spilled along roadways, the method will give better protection against a coal-dust explosion and, under the conditions tried, might be cheaper than the use of water on a large scale.

As many coal-mine explosions and many disastrous mine fires have been started by the lamps used underground, the bureau has been making an investigation of safety lamps, both flame and electric, for coal miners, in the course of which thousands have been tested.

During the year H. H. Clark, the bureau's electrical engineer, continued investigation of portable electric mine lamps, devising and conducting tests for safety and practicability. Manufacturers submitted a number of these lamps for test. The design and construction of all these lamps were more or less changed by the manufacturers to conform with the bureau's requirements and suggestions. Probably the greatest advance through the bureau's efforts has been the improvement of the lamp bulbs—an advance made possible by the principal makers of bulbs in this country, who have agreed to make bulbs according to the bureau's specifications.

Development of Improved Breathing Apparatus

Rescue crews have to do hard work in the poisonous atmosphere of a mine after an explosion or fire, and the breathing apparatus they wear must be of the best design and construction. It must be absolutely reliable, must supply an artificial atmosphere of great purity, must be as light as is consistent with strength and should impede the movements of the wearer as little as possible. With a view to devising apparatus better than that of foreign make now used, investigations have been carried on at Columbia University by W. E. Gibbs, engineer of special research. Yandell Henderson, consulting surgeon, acted in an advisory capacity. Such a breathing apparatus, a self-contained unit wholly on the back of the user, has been developed during the last year by Mr. Gibbs. It is light, and its parts are all substantially protected against injury.

By means of a special device oxygen is fed at the rate it is used, and although plenty is available for the wearer when working hard, none is wasted when he is resting. Hence, the new apparatus may be worn for a considerably longer time without recharging than models now in use. An unusually efficient carbon-dioxide absorber that liberates little heat is another feature of the apparatus. Caustic soda, which is much cheaper than the potash salt formerly thought necessary, is used as the absorbent.

Explosives Used in Coal Mines

As the use of improper explosives has caused many mine explosions, the bureau has examined and tested the explosives used in mining, especially coal mining, and has caused manufacturers to compound explosives that are less dangerous or are better adapted for doing certain work, taking the place of the dangerous black powder in gaseous and dusty mines. These are known as permissible explosives and have quick, short flames, much less likely to ignite gas or dust than the flames of black powder or dynamite. No great explosion disaster has been traced to the use of these explosives, and their introduction marks one of the greatest advances yet made in increasing safety in mines that are dusty or liable to outflows of gas.

By calling attention to the possible dangers attending the use of electricity in mines, the bureau has led manufacturers to devise safer types of apparatus, especially electrical switches and motors that can be used in gaseous atmospheres without danger of causing explosions by sparks or flashes. Several states have enacted stricter laws regarding electrical equipment in mines, these laws being based on recommendations made by the bureau.

In closing, I cannot better express the attitude of the bureau in its work than to quote the following from the latest annual report:

> In the conduct of its investigations the bureau's efforts are directed solely toward the advancement of the public good. It labors without bias and without prejudice, and it must of necessity be a nonpartisan organization. It does not favor the mine operator as against the miner, nor the miner as against the operator, but it does strive continually to advance the welfare of all those who labor in the mineral industries, and its work is for the benefit of those industries and for the public.
>
> In its efforts to bring about safer and more healthful conditions and to increase efficiency and lessen waste, the bureau seeks the coöperation of all interested persons, and it welcomes the assistance of workmen's organizations, of technical societies and of state officials and state governments in the work for the development of state mining laws and of more effective mine rules and regulations.

Looking Ahead

The following articles will be published in *Coal Age* during the next few weeks, as fast as space will permit, almost every subject of real importance to coal-mining people having been treated by the authors of these papers:

"Simplicity in Tipple Design;" "A Refuse-Stacking Car;" "The Fuels of Texas;" "New Mining Machines;" "The Home Grounds of the Miner;" A Handy Report for Shaft Sinking;" "Timbering Coal Mines;" "Stripping Coal in Ohio;" "Standardizing Operations in Coal Mines;" "School Grounds in the Coal Regions;" "A Water Softening, Purifying and Filtering Equipment;" "The Importance of Gardens to Mining Towns;" "Quarry Storage of Coal;" "A One-Man Roof Driller;" "Improving the Quality of Pillar Coal;" "Electric Coal Cutters for Gassy Mines;" "Economics of Haulage;" "Calculation of Mine Dams;" "Winding Drums;" "The Shaker Screen;" "Protecting Electrical Equipment;" "The Humidification of Ventilating Currents;" "An Illinois Haulage System;" "Burning Pulverized Culm at the Mines;" "Something New in Steam-Power Air Compressing;" "A Model Coal Installation in Durham, England;" "Handling Cars on Pitches;" "Practical Suggestions Concerning Steam-Shovel Mining;" "Effective Accounting Methods," and "Coal Face Conveyors."

Who's Who in Coal Mining

The biographies of prominent coal men that have been run in *Coal Age* under the heading "Who's Who in Coal Mining" have proved so interesting to many readers that we have decided to make these sketches a more or less permanent feature. We want your coöperation, however, and will be glad to have all our friends send us short biographies of important coal-mining people, always accompanying the sketch with a photograph of the subject. If you have a boss or an associate who you think is entitled by experience and accomplishments to a little tribute of this kind, get busy and send us a story about him. How did he get ahead and to what is his success attributable? If for one reason or another you don't want to prepare the sketch yourself, give us the name of the person you have in mind and we'll see if we can't get a "Who's Who" of him. With your help we can make this department of even greater benefit and inspirational value than we have in the past.

Editorials

Your Co-operation

Coal Age has accomplished much for the fuel industries. Through its educational work it has added to the safety of mining, as well as to individual and corporate efficiency. However, it has not done more than it should have done, and it has not been the only factor in helping to advance mining. The Government has done its share, many individuals have done theirs, and numerous progressive companies as a whole have added their quota to the total of general betterment.

The sum of all these efforts has brought about a change that was hardly dreamed of a decade ago. Every worthwhile mine official today thinks safety, acts it and preaches it to his subordinates. One thing is largely responsible for such material progress—and that is coöperation. Men have told their experiences to others. Each has profited by what the other has done.

We are really desirous that 1916 be a year of greater advancement than any preceding 12 months. This can only be brought about by active discussions of vital problems. Facts are best evolved through argument, and it takes at least two to start an argument. The more that participate in such discussions the greater the number of sidelights on the questions under review.

Without further waste of words, let's to the point. We want you to contribute to our pages as well as to read what we publish. Every page and every department is open to you from the Foreword and Ideas and Suggestions to the back of the paper. All matter prepared for us is paid for at a fair space rate. If you can write a foreword that is acceptable, the payment will not be less than $10 and may be double that sum. A brief idea of a practical and helpful nature will net $5 or $10.

An article descriptive of a modern method of mining, a new machinery installation, an effective plan of welfare work, a new scheme of accounting or any other equally interesting subject will bring the author anywhere from $10 to $50. And it does not take long to write about that which is already clear in one's mind.

Right here, however, we will digress long enough to answer for all our readers some questions that are frequently asked:

1. Illustrated articles are most desirable, and we must have original photographs—not cuts. Any sized photo will do. Smooth, glossy finish is best. Drawings can be in pencil or ink. They may be rough sketches, finished tracings or blueprints. No matter what they are, we redraw and reletter them.

2. Manuscript copy must be legible. Typewritten copy, of course, is preferable, but pencil or ink copy will do. One thing is important—do not crowd the writing; leave plenty of space between the lines so that the editor may correct and revise the article. Many a good article lies on an editor's desk waiting for him to get an opportunity to "dig it out," while articles received at a later date, but properly and carefully prepared, go through with a rush.

3. Correct spelling, punctuation and proper construction are desirable, but not essential to any fine degree. The man who uses the shortest, simplest words to express his thoughts is most easily understood and is therefore the best writer. An editor can quickly edit an article if plenty of room is left for corrections and insertions. A closely written manuscript cannot be edited and must therefore be redictated. This generally consumes more time than the editor would devote to writing an original article of equal length.

We want your coöperation in our editorial work. *Coal Age* will be better this year than ever before if our readers will interest themselves and lend their aid. And remember we are approaching you on a business basis. We are not seeking to obtain something for nothing. Upward of a half-million dollars has been put into this paper, and the largest part of this great sum has gone to men engaged in mining coal. Here, therefore, is a chance to profit, not only materially, but through an enlarged reputation. Get busy now. Tomorrow is always one day away.

Pan-American Trade Is Urged Largely for Sentiment

Some of the unsympathetic have been unable to comprehend the Pan-American policy, the Pan-American Scientific Congress and all that they portend. Some cannot see why we should seek so diligently for friendship and trade with a people of an essentially alien origin and markedly different aims, and take no care for the expansion of our business with the people to the north of us, who are cousins by both birth and feeling.

Canadians are not the only people who are wondering why a special building was erected by Andrew Carnegie in Washington and why a staff has been established at the expense of the several governments to promote harmony and commerce with the South Americans, while the Canadian friendship and trade are left to the tender chances of our intercourse. They are not the only people who wonder; the members of the Pan-American Union are marveling also, and on the whole they cannot fathom the peculiar twist of the American mind, the odd obliquity of vision—for such they cannot fail to regard it—which makes us so anxious to embrace and so desirous to buy and sell with people who do not naturally feel warmed toward us.

Of course those who know how the warped mirror has been held to our history till its fullnesses are hollows and its leannesses rotundities understand the reason for the power of these movements. They know that our thought rays, traveling through an artificial medium of subsidized and government-aided publicity, are no longer unrefracted. This fostered interest in the lands south of the Rio Grande does not arise from a desire to absorb them as South Americans naturally imagine, but is a piece of sentiment which by the power of suggestion and auto-suggestion has permeated us and urges us to try

to do business with the Pan-Americans despite their suspicions, their language and their different origin.

But this anxiety to fly in the face of circumstance which makes us regard exports to Canada as domestic trade and yearn so to deal with the Latins of the continent is nevertheless strange and worthy of explanation. Why should we neglect Canada, which is near to us in distance, in race and soul, and be so anxious to seek the suffrage of the Latin people?

No one can deny we are sentimental. George E. Roberts of the National City Bank of New York City, with which Pan-Americanism is an obsession, urges that we try to obtain South American trade "by investments in South America."

Did you ever hear any one in the United States urge that we make trade for Uncle Sam by moving our factories to Canada? Is this the main purpose of the Pan-American Union—to take our loose money to Argentina and Brazil or open a coal mine in Colombia solely with the idea of cementing this artificial bond? If this is the trend of the reasoning, people may well be excused if they pass up the American doctrine of "humanity first" for the narrower proverb now fashionable at Washington.

No one believes the Canadians are going to try to capture trade with the United States by erecting factories in Connecticut and opening coal mines in Pennsylvania. Why, for the mere sake of seeking trade in the South, should we plant any kind of mill or open any sort of mine in South America?

Of course we do want peace and amity with the people south of us. They are far more admirable in many ways than we think. Because their public-school system is not like ours is no reason why we should think their learned men are not as well skilled as can be found in our colleges. They are a little more academic, but not a whit less cultured, and their sense of art is keener than our own. We have only a fleeting sense of the surpassing beauty of their cities.

We really do want to trade with them if we can do it profitably. Perhaps we would do well to make more investments in their railroads, mills and mines. In fact even more might be conceded. We might admit that it is better to build a factory or open a mill in South America than in Canada because the Latin is not the Anglo-Saxon with his jealous eye restricting profits by provocative enactments and then again because some South American deposits are fabulously rich.

But trade in Pan-America should not be the shuttlecock of sentiment. If there is any such feeling, it should really draw us to the people with the maple leaf on their flag; if trade is to be developed for friendship's sake, it is natural to expand our commerce with them.

Yet not even in regard to Canada should we act on impulse and emotionalism. Every foreign development of our commerce should be based on profit. It may pay us to put our investments abroad where they will not be subject to Trade and Interstate Commerce Commissions and Public Service watchdogs which prevent fair margins and the acquirement of wealth. It may be better to run a few risks of losing money in upheavals as in Mexico and from the negligence of Presidents, in view of the rich rewards.

But let it be for these profitable ends that we do business and not because at one time a clever politician caught the popular fancy, hypnotized America and made us feel rather than think. How simply we follow after propaganda and how easily, having endowed a thought with a name, a stately home and a man to impersonate it, we let it dominate us till the vision which we slackly permitted overshadows our very reason.

Present Trend of Conditions on New Contracts

In New England the great anxiety over shipments on present contracts has completely overshadowed all consideration of purchases for next season. In most cases both shippers and local distributors are declining to enter into new engagements until there is some clearing up in the situation. A few Pennsylvania operators have been sounding out the buying opinion with regard to higher prices after Apr. 1, but it is felt this was done with more of a bearing on new wage schedules than any real effort to get future tonnage. The fact that a very large proportion of the 1916-17 contracts inland from Boston, Providence and Portland and at tidewater were closed the latter part of 1915, and at very low prices, will make buyers diffident about purchasing early unless there is a mining suspension.

The Cambridge (Mass.) Water Board contract (No. 1728, Vol. 8, p. 1045) awarded on Pennsylvania bituminous shows the influence of higher prices early in December, the price being 40c. higher than the previous six months. On the other hand, the bids on coal for the United States engineers, Norfolk, Va. (No. 1651, Vol. 9, p. 106), indicate how easy the position of Pocahontas and New River was at Hampton Roads at about the same time.

Despite increased prices, contracting at Philadelphia is active. Consumers seem anxious to be protected as soon as possible, even if for only three months, which is all the principal shippers are willing to contract for.

Bids for city business (No. 1835, Vol. 8, p. 1089, Vol. 9, pp. 36, 106, and this issue)—one of the most important contracts of the year involving approximately 250,000 tons of both anthracite and bituminous coal—showed greatly increased prices. Anthracite coal averaged about $1 a ton higher than last year, and bituminous was in some instances more than $1.50 higher. In addition most of the bidders protected themselves with strike clauses, though there were several bituminous shippers with mines in unorganized territory who omitted this protection.

A large bulk of the anthracite award was made to concerns not directly engaged in the mining of coal. One of the biggest anthracite mining companies, which formerly had a large proportion of the city tonnage and whose prices at this time were considerably lower than its nearest competitors, had its bid thrown out because it declined to protect prices for more than three months, nor would it agree to deliver coal on an analysis basis at this time.

Shipments are now being made on this business by the lowest bidders, but there has been no official award as yet, and there is a persistent rumor to the effect that the new administration that came in with the first of the year will in a short time reject all bids and readvertise. This can be readily done, as the bidding forms reserve great latitude as to the acceptance or rejection of a contract.

Discussion by Readers

West Virginia-Ohio Coal Rates

Letter No. 1—Referring to the article by J. W. Dawson, *Coal Age*, Dec. 11, p. 973, bearing on the rates on coal from West Virginia mines, I beg to state that it is not the desire of the western Pennsylvania and Ohio coal operators to bring disaster to the coal-mining interests of West Virginia, but to simply have applied to all sections rates that will be equitable.

Every natural deposit has its own natural market, to which it should have an equitable rate for shipment. In past years, in order to encourage the development of West Virginia coals, less than normal rates were allowed, and under such rates the development was very much greater than had been expected. This operated to the decided detriment of the older coal fields, more advantageously located with respect to certain markets.

In the beginning it was a concession, the real cost of which was actually borne by the other fields, since the various carriers worked on the general-average theory. Now, West Virginia, having had its trade established at the expense of western Pennsylvania and eastern Ohio, which was accomplished in reality through discriminatory action, when the wrong is about to be righted, naturally insists on its perpetuity.

Equitable Freight Differentials

There is an equitable differential between all the productive coal fields for certain markets, and this difference should be observed in the making of rates to such markets. Differentials should be really applied on the percentage basis, and the actual operative conditions of the various carriers concerned should be taken into consideration.

It will be found that the fair Lake rate from the Kanawha district, controlled by the Kanawha & Michigan, should be $1.15 and from eastern Ohio mines 80c., or practically 70 per cent. If the former rate is 97c., as at the present time, the latter should be 70 per cent. of that rate, or 68c. for eastern Ohio.

Likewise the equitable rate from the Pittsburgh district to Lake ports should be 64c., which is 55.6 per cent. of the Kanawha rate. When the latter is arbitrarily made 97c., the former becomes 55.6 per cent. of that rate, or 54c. for Pittsburgh shipments. The operators of Pennsylvania and Ohio are tired of carrying the West Virginia load and simply demand justice, regardless of the amounts applicable to the various districts. H. K. Myers.

Pittsburgh, Penn.

Letter No. 2—Referring to J. W. Dawson's article, "Change of Railroad Rates in West Virginia," *Coal Age*, Dec. 11, p. 973, permit me to reply to some of the statements made therein. I desire to do this solely in the interest of fair play. From the beginning of time men have been prone to undertake impracticable feats and, when they fail, to accuse their fellow men of conspiring against them. From a careful study of the situation it is quite evident that the coal operators and railroads of western Pennsylvania and Ohio have no need of conspiring against the coal industry of West Virginia, although they may need to take concerted action to protect their natural markets from appropriation by West Virginia interests.

I have heard it said that Cain slew his brother in order that he might broaden his own field of operation and, in answer to an inquiry as to his brother's welfare, replied that he was not his "brother's keeper." Stephen A. Douglass undertook to discredit Abraham Lincoln by stating to an audience that Lincoln had been "employed behind a counter over which liquor was sold." Lincoln, in reply, stated that "A truth half told is worse than a lie" and added that he "had at one time, in an effort to earn an honest living, accepted employment in a grocery store where liquor was sold over the counter; but Mr. Douglass had forgotten to say that he himself was the best customer."

The Truth But Half Told

I may say, when Mr. Dawson stated that Ohio increased its coal production from about 18,000,000 tons in 1900 to 36,000,000 tons in 1913, as evidence that it was only the mine-run law that was retarding Ohio's coal industry, and neglected to say that West Virginia's coal production increased from 16,700,000 tons in 1898 to 71,000,000 tons in 1913, he only told half the truth. Looking at these comparisons, one naturally wonders what induced this phenomenal, or mushroom, growth of the coal industry in West Virginia.

Mr. Dawson claims the coal of West Virginia is of a superior grade, and yet he gives the prices of coal shipments as $1.09 for Ohio, $1.12 for western Pennsylvania and only $1.03 for West Virginia. He admits that a large part of West Virginia's production moves into and through the coal-producing states of Ohio, Indiana and Michigan. If West Virginia coal is superior in quality to that of Ohio and western Pennsylvania, which is questioned, why have they been selling it in Ohio and western Pennsylvania markets for 6 to 9c. per ton less, unless it was for the purpose of appropriating those markets.

Seeming Attempt to Discredit Ohio

Why has Mr. Dawson emphasized an increase in the Ohio production of 100 per cent. in 13 years and neglected to mention an increase of 325 per cent. in West Virginia in 15 years, unless it was to discredit Ohio just as Douglass tried to discredit Lincoln. Mr. Dawson seems to resent the alleged statement that the development of the West Virginia coal industry to its present proportions was an economic blunder. The statement might well have been made in stronger terms, because any branch of an industry that must depend upon men and railroads permanently rendering service at three-fifths the prices for like services in other branches of the same industry cannot be successful in face of the tendencies for fair play assured by governmental control.

As Abraham Lincoln once said, a nation cannot continue to exist half-slave and half-free. No more can railroads continue to transport coal from one district at

three mills per ton-mile and charge other districts five mills per ton-mile. Neither can one district continue to have its coal cut and loaded into mine cars for 30 and 32c. per ton, while the majority of mine workers receive 45 and 47c. for like service. One district cannot continue to pay but 22½c. per hr. for mule drivers, while the greater number of mule drivers receive 37½c. It cannot continue to be lawful for men to organize, parade and strike in one state, while the same acts are unlawful in another state. Neither will men long be imprisoned for violation of an injunction of silence in one state, unless they are imprisoned in other states for a like offense, because the various branches of the Federal Government will in due time eliminate these inequalities.

No Conspiracy of Ohio and Western Pennsylvania Operators

There is and there has been no conspiracy on the part of the coal operators and railroads of western Pennsylvania and Ohio. There has been no need of such conspiracy, because the coal beds of western Pennsylvania and Ohio are so situated with reference to the great coal-consuming territory that operators do not need to conspire. Unfortunately, they have been forced to the necessity of united action by the prevailing Cain-and-Douglass spirit so prominent in West Virginia, which has resulted in the appropriation of markets through subvention of rates by the mine workers and railroads of that state.

Mr. Dawson is concerned as to what will happen to the mine workers of West Virginia and their families, but does not for one moment consider what has already happened to the mine workers and their families in the coal-producing states of Ohio, Indiana, Michigan and Pennsylvania, whose markets he admits West Virginia must hold or the coal industry of that state will suffer. It is rather late to announce such apprehension. It would have been a more appropriate time to have considered that question before seeking to gain control of those markets by means of subvention of labor and transportation rates. West Virginia can pay the usual rates for labor and transportation and supply its natural markets, but it cannot and never could hope to supply the natural markets of Ohio, Indiana, Michigan and western Pennsylvania without subvention of those rates.

Possibility of Federal Intervention

The coal operators and railroads of West Virginia, when they undertook to appropriate the markets of Ohio and western Pennsylvania, assumed the responsibility of any loss and suffering that may accrue to the coal industry of that state whenever the various branches of the Federal Government will require fair play and demand that the charges for service be measured by the same standard everywhere.

The coal operators and railroads of West Virginia are not wholly responsible for the loss accruing to the coal operators, railroads and mine workers of Ohio, Indiana, Michigan and western Pennsylvania, because the United Mine Workers' organization assumed a part of that responsibility when it exerted its strength in forcing increases of wages in those states and made no appreciable effort to obtain the same advances in West Virginia. While there were extenuating circumstances in the way of the injunction of silence specialized upon in West Virginia, the officers of the United Mine Workers' organization need not have encouraged subvention of labor rates by recognizing and participating in contracts contrary to their avowed principles, thereby becoming a party to subsidizing the coal industry of West Virginia to the extent of one-third of the mine workers' earnings.

It certainly costs a miner and a mule driver as much to live in West Virginia as it does in Ohio, especially where they have no opportunity to buy their necessities except from one merchant who has no competition. The officers of the United Mine Workers have insisted upon increased rates in Ohio because of the increased cost of living, and the cost of living has surely increased as much in West Virginia as in Ohio. If a mule driver is worth 37½c. per hr. in Ohio, his services should be equally valuable in West Virginia; but, when he works in West Virginia for 22½c. per hr., he is subsidizing the coal industry of that state to the extent of 15c. per hr. Mine workers either get too little money in West Virginia or they get too much money in Ohio, and if the selfish interests of operators cannot see this, the officers of the miners' organization should see it. If it was wrong that one man be in bondage and the other free, it must be wrong for one man to be free and the other one-third bound.

The whole matter seems to be a question for the Federal Government to work out along equitable lines, assuring to each element an impartial adjustment of the evident discriminatory rates and conditions, which have resulted in the present chaotic condition.

This seems to be the only hope of a just and equitable solution, and the writer for one will be content to have the Federal Government adjudicate the matter, with the confidence that no branch of that Government will make a desert of Ohio in order to increase the fertility of West Virginia.

J. J. Roby.

Cleveland, Ohio.

Expressing Grades in Mining

In his article entitled "Mine Hoist Calculations," *Coal Age*, Dec. 4, F. L. Stone says, page 917, as follows: "It must be borne in mind that percentage of grade as given in coal-mine work is in reality the sine of the angle that the slope makes with the horizontal and the rope pull due to the weight alone is W times this sine."

In my opinion Mr. Stone should qualify this remark by making it apply to engineering practice in highly inclined seams. As a matter of fact, grades in coal-mining practice in the large majority of cases are expressed the same as in railroad work, the grade being taken as the ratio of the vertical height to the horizontal distance, instead of the distance measured on the incline.

When the grade is thus referred to the horizontal distance, the percentage of grade expressed decimally is equal to the tangent of the grade angle.

If the 6-per cent. grade assumed in Mr. Stone's calculations is referred to the inclined distance, his figures are correct, but if this percentage of grade is referred to the horizontal distance, the angle of inclination must be found, and will be the angle whose sine is 0.06. The weight hoisted must then be multiplied by the tangent of this angle to find the effective weight or pull on the rope.

C. E. Bowron.

Birmingham, Ala.

Efficient Mine Foremen

Letter No. 19—After reading with much interest the letters on this subject I am led to give my definition of what constitutes an efficient foreman in a coal mine. He must be an active man who is well versed in technical mining and a diligent student of modern methods and equipment, besides possessing sufficient executive ability to enforce strict discipline in the mines. Such a man in the employ of a reasonable company will, in my judgment, make an efficient foreman.

However, as we all know, there are instances where the company or its manager or superintendent fails to work in conjunction with the foreman, which handicaps all his efforts and bridles his efficiency. As a result, his time of service with the company is of short duration, for which he may not be wholly to blame.

In order that a mine foreman may reach a high standard of efficiency, it is imperative that he shall understand human nature and be able to decide promptly the many petty troubles that arise among the workmen, without referring such minor matters to the superintendent or manager. As a matter of fact, all men know right from wrong, and a just decision meets with the approval of even him against whom it discriminates. Mine workers all know that it is a mine foreman's highest duty to enforce the company's established rules of discipline and compel obedience to the mining law, mine regulations and the instructions of the mine inspector.

Besides his dealings with the men in his charge there is another phase in which the mine foreman must show his efficiency. I refer now to the power to keep under constant observation the daily routine of the mine and know the progress that is being made in every branch of the work. He must be able to judge correctly of the capabilities of different men to perform various kinds of work, in order that he may know when certain work has been performed with diligence. With this knowledge at hand he is able to make at any time an intelligent and reliable report with respect to the capacity of the mine and the possibility of increasing the daily output of coal. With some men this is a natural endowment, while others acquire such ability by constant application and study. It is, however, an important part of the make-up of an efficient mine foreman. PHILIP M. WEIGLE.

Hooversville, Penn.

Letter No. 20—I have followed with great interest the discussion of the efficiency of mine foremen and feel that I must give a little of my own experience along this line. I started as a fireboss and later became, in turn, assistant foreman, mine foreman and superintendent. I find that much that has been said agrees with my own views.

The fireboss, as a rule, has twice as much work on hand as he can do properly. On his second round he cannot give the attention he should to the examination of falls and abandoned places. Also, as has been remarked, the assistant foreman in many cases practically runs the mine, while the foreman sits in his office or, at times, sleeps off a jag that he had the night before. It is clear that the foreman in such a case is far from an efficient man in his place. If it were not for his assistant, such a foreman would not hold his place long, but the assistant seldom, if ever, gets any credit for his hard work.

I have found in my experience that a mine foreman is greatly aided in his efforts to attain efficiency by the encouragement given him by his superintendent. It sometimes happens that, with the idea of economizing, the superintendent will lay off a foreman or his assistant or a fireboss for a day or so at a time when work is slack. Such a practice discourages the man and makes him less efficient in his work than he would be if allowed full time, as there is always work that he can do to advantage during the slack period. I have found that to get the most out of my men I must treat them as I would be treated in the same position myself. There is nothing to be gained by laying these men off and docking them for some error or mistake for which they may not, after all, be wholly to blame.

An efficient mine foreman, employed by the month, will not lay off when the mine is idle, but will busy himself looking after the many little things that require his attention. As mine foreman, I had two assistant foremen and three firebosses in my charge, and I have found it of advantage to employ these men steadily days when the mine was idle. In the long run this plan will generally save money for the company. A. J. FULTON.

Kittanning, Penn.

Calculating Relative Humidity

Letter No. 1—Referring to the inquiry of "Miner," who asked for a practical method of calculating the relative humidity of the air without the use of hygrometric tables, *Coal Age*, Dec. 11, p. 986, permit me to offer for consideration a method that I have frequently used and found to give fairly approximate results in mine work.

So far as I am aware and as stated in the reply to this inquiry found on the same page, no formula has ever been published for calculating the relative humidity of air without the use of hygrometric tables. I have often searched technical books to find such a formula, but without success. As "Miner" states that he is familiar with the usual means of calculating relative humidity by the use of the tables, it will be unnecessary to refer to these well-known methods. What I have to suggest has been found helpful in my own practice and I hope may prove useful to others.

Assuming that 100 per cent. represents a state of complete saturation of the air, the drop in percentage for each degree of difference between the dry- and wet-bulb readings is based on the reading of the dry-bulb thermometer and varies with the temperature as follows:

Dry bulb, 40 deg. F., drop = 7 per cent. per deg.
Dry bulb, 50 deg. F., drop = 6½ per cent. per deg.
Dry bulb, 60 deg. F., drop = 6 per cent. per deg.
Dry bulb, 70 deg. F., drop = 5½ per cent. per deg.
Dry bulb, 80 deg. F., drop = 5 per cent. per deg.

Applying this rule to the case cited by the correspondent gives the following results: Dry-bulb temperature, 70 deg.; wet-bulb, 63 deg. F.; difference, 70 — 63 = 7 deg. Since the drop for a dry-bulb reading of 70 deg. F. is 5.5 per cent., the total drop in this case is $7 \times 5.5 = 38.5$ per cent. The relative humidity is, therefore, 100 — 38.5 = 61.5 per cent., as found by this rule, while the actual percentage calculated by the use of hygrometric tables is 67 per cent., a difference of 5.5 per cent.

In actual mine practice, however, the rule suggested gives more approximate results. For example, take some actual mine readings, which are as follows:

1. Dry-bulb, 49 deg.; wet-bulb, 45 deg.; difference, 4 deg. = 74 per cent.; actual, 73.0 per cent.
2. Dry-bulb, 45 deg.; wet-bulb, 43 deg.; difference, 2 deg. = 86 per cent.; actual 85.1 per cent.
3. Dry-bulb, 46 deg.; wet-bulb, 45 deg.; difference, 1 deg. = 93 per cent.; actual, 92.6 per cent.

These results prove that the method I have suggested is very close for actual readings obtained in mine work, nd I think that if "Miner" and others will test the method in their own practice, it will prove satisfactory.

Ensley, Ala. THOMAS MULHOLLAND.

[The method suggested by this correspondent, it will be readily seen, is approximately correct at sea level for small differences between the dry- and wet-bulb readings. For greater differences the approximation is not so close, as shown in the case cited by "Miner" and calculated by our correspondent. Moreover, the method takes no account of elevation above sea level or changes in barometric reading, to which conditions we have previously drawn attention when replying to this inquiry.—Editor.]

Store Checks vs. Thrift

Letter No. 10—I have been reading with great interest the discussion of the store-check system and hope that it will not be given up until those who are so anxious for this system to be abolished are made to see that it is an absolute necessity in many mining towns and camps.

For the most part those who picture the store-check ystem as a bad one are people who have never spent a week in a mining camp in all their lives and know little or nothing of the conditions that exist in a large number of mining localities. Take, for example, some of the mining towns of eastern Kentucky or West Virginia, where there is nothing but a few houses grouped about the mine, which were built for the miners and mine officials. It goes without saying that if the coal companies operating there did not run a general supply store where their employees could obtain the necessaries of life they could not operate their mines.

The Store-Check System a Convenience

Under the conditions prevailing in such mining districts the store-check system is a convenience, both to the miners and to the operating companies. To illustrate: Coal miners as a rule belong to the migrating class. They are a class by themselves. When a miner strikes a camp, he is generally "broke." He has no money to pay for the necessary food for himself or family. In this condition he can generally go to the store, and it will allow him to draw a sufficient amount of store checks to supply his immediate needs so that he can start to work. It is hard for one who has not tramped the coal fields, as I have done in five states of this country, to realize what it means to be "broke" and how the store-check system is a blessing rather than a curse to the miner.

I am willing to admit that advantage is often taken both by the company and by the miners where the system is in use. For example, the company often prohibits miners from trading at other places than the company store; and again, the man who has the heaviest account on the store books often has the best place given him in the mine. I have observed, however, that where this is the custom, the poorest class of labor is employed and the miners put out the dirtiest coal. I believe also that if the cost sheets at such mines were to be closely analyzed, they would show the highest cost of operation per ton of coal mined.

I want to compare conditions where coal companies run stores for the convenience of their miners with places where it is unlawful for a coal company to operate a store in connection with its mines. For example, a miner applies for work at a mine in Kentucky, West Virginia or some other state where company stores are in operation, and if he is "broke," he can go to the store and draw the amount of his first day's wage in store checks, which will enable him to live until payday comes around. For this accommodation there is no discount made when he gets his pay envelope.

Now, compare these conditions with those that exist in Illinois, where it is unlawful for a coal company to run a store in connection with its mine, and a coal company is not allowed to give a store check to a miner. After the passage of this law by the State Legislature the coal companies organized a grocery or supply company, and in connection with this they have what is called by the miner a "sticker" office. This is merely a company office where the miner's time is turned in. A miner coming to town "broke" can often get no money until payday, and he must have at least two days' work before he can get anything at the "sticker" office. At some mines he must pay 10c. for every dollar he draws before payday, and he is charged 2c. for each sticker written for him. I would ask which of these systems is preferable.

Effect of Removing the Company Store

It has been claimed that the removal of the company store would have a tendency to make the miner "more thrifty." I fail to understand how it would operate in this manner. While there is a certain class of miners who will save money if given half a chance, there is a larger class who would not save a cent if they earned a salary ever so large. I know of a mine foreman who earned $125 a month, while his assistant, who only received $85 a month, was often called upon to lend his boss money to tide him over to payday. There was no scrip system at this mine, and yet that fact did not help to make the foreman "thrifty."

In reply to this argument I would like to ask, What would be the result if the city authorities attempted to dictate to citizens how they should spend their money, with the hope of making them more thrifty? It seems to me that this would be a parallel case to the attempt to force miners to economize by removing the company store. A mining town or camp, at the best, is not very attractive, and every effort should be made to make life more comfortable and pleasant for mine workers, whose lot it is to pass one-third of their time underground, where they are denied the sunshine and free atmosphere that is enjoyed on the surface. It is no wonder that, when they come out of the dark hole where they labor, they want to enjoy life as best they can. It is my conviction that there are greater evils in coal mining than the store-check system as practiced in the company store, and in attempting to find a remedy for the objectionable features of this system, there may be the danger that the cure will be worse than the existing evils. OSTEL BULLOCK.

Eldorado, Ill.

Inquiries of General Interest

The Barograph To Replace the Barometer in Coal Mining

A great deal has been written in regard to the actual effect of barometric changes on the gaseous condition of the air in mines generating gas. The investigation of this question in the mines of Great Britain, France, Prussia and Austria has resulted in establishing the fact beyond all question that a sudden fall of barometric pressure is always accompanied by a considerable increase in the percentage of gas in the mine workings. It is not assumed, however, that the emission of gas from the pores of the coal or rock is materially increased by the decrease in atmospheric pressure.

The fact being established, then, that a sudden fall of barometric pressure is accompanied by an increase in the flow of gas into mines from any source whatsoever, I would like to ask if the safety of operations in a gaseous mine does not depend to a very large extent on a more careful observation of the changes that take place in atmospheric pressure, as indicated by the barometer, which I am glad to say is now to be found at most of the large mines and is considered a part of their equipment, although I fear that the instrument is not as closely observed as its importance requires.

——, Ill. MINING ENGINEER.

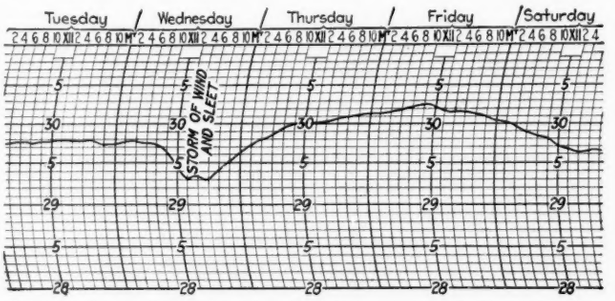
We are glad that the correspondent has drawn attention to the importance of more closely observing the changes in barometric pressure in connection with the safe operation of a gaseous mine. As he has stated, a sudden fall of barometric pressure is shortly followed by a considerable outflow of gas from abandoned workings, and other void places where gas has accumulated.

It is a fact, however, that it requires a sudden drop of the barometer and a large storage capacity for gas to make any appreciable increase in the percentage of gas in an airway where a considerable quantity of air is passing. This is clearly shown by an actual calculation based on 10 acres of abandoned workings in a 6-ft. seam, assumed to be filled with pure marsh gas, where a drop of $\frac{1}{16}$ in. barometer in three hours was found to cause an increase of only ¼ per cent. of gas in an air current of 30,000 cu.ft. per min. (*Engineering and Mining Journal*, Vol. 83, p. 1053).

The assumed drop of pressure in this case is quite moderate for this country. The barometric changes are much more sudden or abrupt here than in England. It is not uncommon to observe a fall of an inch of mercury in from 10 to 12 hr., and frequently the rate of fall is much greater, as shown by the accompanying chart taken from a barograph recording a recent storm in New York (Dec. 29), when the barometer fell ½ in. in four hours.

A close observation of the barograph during a period of 10 years enables us to say that the indications of this instrument precede the actual effects in the mine a sufficient length of time to enable ample warning to be given by telephone from the main office on the surface to the inside workings of the mine, announcing the sudden change in barometric pressure that may be expected and is even then taking place. Indeed, the change of pressure as indicated by the instrument precedes by from two to three hours the actual disturbance of the atmosphere caused by the advancing storm, and it may be assumed that such disturbance is not without effect in increasing explosive conditions in the mine workings through certain vibratory or electrical influences as yet not fully understood.

The real trouble due to a sudden fall of barometric pressure is not to be sought in the increase in the percentage of gas in the air current flowing in an airway. The greatest trouble and danger are experienced in the poorly ventilated places of the mine and in pillar workings. It is in these and similar places that the effect of pressure changes is most keenly felt and the actual danger following a sudden fall of barometer is most to be feared. It often happens that the settling of a drawslate or other thin stratum at the roof in a mine forms a considerable reservoir for gas that is quickly affected by any change in pressure. These places should be closely watched by the fireboss and safeguarded by the withdrawal of the men if necessary or at least by warning them of the approach of danger.



BAROMETRIC CHART, BROOKLYN, N. Y., DEC. 28 TO JAN. 1

In this connection we would urge that every uptodate mine should be equipped with a barograph in addition to the standard mercurial barometer now so frequently seen at the top of the shaft. It is better that both of these instruments be placed together in the main office, which should be connected by telephone with the inside of the mine. It is often wrongly assumed that the indications of the barometer will be more prompt when the instrument is placed out of doors. Any change of atmospheric pressure is manifested with equal force and promptness both indoors and out.

The advantage of the barograph is that the chart shows a continuous reading and any change of pressure is more quickly and accurately observed than is possible with the mercurial barometer. This is an important feature in its application to mine work. The readings of the barograph, which is simply a recording barometer, should be compared from time to time with those of the standard mercurial barometer.

Examination Questions

Miscellaneous Questions

(Answered by Request)

Ques.—The quantity of air required to ventilate a mine is 120,000 cu.ft. per min. If the entire shaft is circular, what should be its diameter in order that the velocity of the current will be 500 ft. per min.?

Ans.—The required sectional area of the shaft in this case is

$$a = \frac{Q}{v} = \frac{120{,}000}{500} = 240 \; sq.ft.$$

The diameter required to give this area is

$$d = \sqrt{\frac{240}{0.7854}} = 17.48, \; say \; 17.5 \; ft.$$

Ques.—Find the specific gravity of a mixture containing one cubic foot of air, two of hydrogen, three of carbon dioxide and four of nitrogen.

Ans.—Calling the density of air (weight per cu.ft.) unity or 1, the specific gravity of these gases referred to air is as follows: Hydrogen, 0.069; carbon dioxide, 1.529; nitrogen, 0.971. Then, since the weight of any solid liquid or gas is equal to the volume multiplied by the density, the relative weights of these gases referred to air as unity are as follows:

Air,	1 volume, 1×1	$= 1$
Hydrogen,	2 volumes, 2×0.069	$= 0.138$
Carbon Dioxide,	3 volumes, 3×1.529	$= 4.587$
Nitrogen,	4 volumes, 4×0.971	$= 3.884$
Total,	10 volumes,	9.609

Then, since the total weight of the 10 volumes of mixed air and gases referred to the weight of one volume of air as unity is 9.609, the density of this mixture (weight per cu.ft.) is $9.609 \div 10 = 0.9609$, or the specific gravity of the mixture referred to air as unity is, say 0.961.

Ques.—A mine is ventilated by two fans, both being located at the top of the same upcast shaft. One of these fans is 24 ft. in diameter and produces a water gage of 1.5 in., while the other fan is 18 ft. in diameter and produces a 2-in. water gage. Both fans are of the same make and are properly constructed. State which of these fans will produce the higher percentage in volumetric capacity and why.

Ans.—Since the larger 24-ft. fan is producing a lower, 1.5-in. gage in the drift connecting it with the upcast shaft, while the smaller 18-ft. fan is producing a higher, 2-in. gage in its drift connected with the same shaft, it is supposed that the smaller fan is running at a higher speed than the larger one.

The question asks, Which fan will show the higher percentage in volumetric capacity? By this is understood the higher volumetric efficiency, or the ratio of the quantity (Q) of air passing through the fan expressed in cubic feet per minute, to the volume (V) of the fan in cubic feet per minute. In fan ventilation the pressure head or water gage (w.g.) varies as the square of the peripheral speed, which is proportional to the number (n) of revolutions per minute times the diameter (d) of the fan. Hence, the water gage varies as the square of the product of the speed and diameter of the fan; thus

$$w.g. = (nd)^2 \qquad (1)$$

But, for the same conditions in the mine or airway, the quantity of air in circulation varies as the square root of the water gage, or as nd; thus

$$Q \quad varies \; as \quad nd \qquad (2)$$

Again, the volume of the fan expressed in cubic feet per minute varies as the speed and the square of the diameter of the fan, which gives

$$V \quad varies \; as \quad nd^2 \qquad (3)$$

From the two last expressions it appears that the ratio of the quantity of air in circulation to the volume of the fan varies inversely as the diameter of the fan, which is expressed by the formula

$$\frac{Q}{V} \quad \text{varies as} \quad \frac{1}{d} \qquad (4)$$

In other words the volumetric efficiency K varies inversely as the diameter of the fan; thus

$$K \quad \text{varies as} \quad \frac{1}{d} \qquad (5)$$

This shows that the smaller fan, running at a higher speed and producing a higher gage and consequently taking a larger volume of air, presents a higher volumetric efficiency—in the ratio of 24 : 18 or 4 : 3. In other words the volumetric efficiency of the small fan is practically 1⅓ times that of the larger fan, under the assumed conditions.

Ques.—If a ventilating fan running at 80 r.p.m. produces a water gage of 3.75 in., at what speed must this fan be run in order to produce a water gage of 1.82 in.?

Ans.—The water gage is reduced approximately one-half, and since the quantity of air in circulation varies as the square root of the pressure or water gage, the quantity of air circulated under this reduced gage will be $\sqrt{0.5} = 0.7$. Then, it is generally assumed that the speed of the fan varies with the quantity, and on this basis the speed would have to be reduced in the same ratio as the quantity, which gives for the reduced speed, $80 \times 0.7 = 56$ r.p.m.

More accurately, however, the fifth power of the water gage varies as the eighth power of the speed of a fan, for the same conditions in the mine or airway. Hence, the speed ratio is equal to the eighth root of the fifth power of the water-gage ratio; or, expressed as a formula,

$$\frac{n_2}{80} = \sqrt[8]{\left(\frac{1.82}{3.75}\right)^5}$$

$$n_2 = 80 \sqrt[8]{0.485^5} = 80 \times 0.636 = say \; 50.9 \; r.p.m.$$

That is, the speed of this fan must be reduced to practically 51 r.p.m. in order to make the required reduction in water gage for the same conditions in the mine.

Coal and Coke News

Harrisburg, Penn.

As a result of rumors that some employers are contemplating reducing wages or levying assessments as reimbursements for the cost of workmen's compensation insurance, the State Compensation Board has ruled that such methods will be contrary to the letter and spirit of the law.

This action is the first to be taken by the state following these rumors and the practice of coal and laundry companies in adding the insurance cost to their products.

A hint that drastic action may be taken in the near future if employers try to secure the insurance cost from their employees is given by Chairman Mackey in a statement, in which he says that the power of the Commonwealth will be called upon to protect the wage earner.

The board is considering the 10 to 25c. increase recently made in the price of coal, it is said. Several big operators have announced recently that the cost of coal would be increased to consumers because of the compensation expense.

The board's ruling follows: "It is contrary, both to the letter and the spirit of the workmen's compensation act of 1915, for an employer to levy contribution upon his employees by reducing their wages or otherwise for the purpose of meeting his liability under the act."

Corporations (coal) exempted from insuring by the workmen's board are:

Cambria Steel Co., Delaware, Lackawanna and Western Railroad Co., Lackawanna Iron and Steel Co., A. Pardee & Co., G. B. Markle Co., Penn Mary Coal Co., Heilwood Coal Co., Price Pancost Coal Co., Temple Coal Co., Forty Fort Coal Co., Mt. Lookout Coal Co., Lackawanna Coal Co., Windoon Coal Mining Co., Lehigh Coal and Navigation Co., Harwood Coal Co., Alliance Coal and Mining Co.

Companies underwriting workmen's compensation insurance in Pennsylvania have been ordered by the State Insurance Department to cover only compensation liability under the approved rates. Additional liability requires additional premium or the coverage is impaired.

In explaining the order the insurance commissioners say in part:

No other liability than for workmen's compensation may be assumed by any insurance carrier unless an extra charge is made for the additional protection, under the order issued by the Insurance Department. By this interpretation, the State Fund policy gives equivalent protection in every respect as that given by any other policy.

Merit rating should reflect actual hazard conditions as determined by an impartial inspection. To secure such inspection the Insurance Commissioner has caused to be organized the Pennsylvania Compensation Rating and Inspection Bureau. All merit rating under the compensation act will be made by this bureau.

No merit rating by any insurance company will be approved. Until the risk has been inspected and rated by the bureau, no insurance company is in position to say what the final rate will be. Any promise of a rate upon a company's inspection and a merit rating is a wilful misrepresentation of the facts.

Practically all of the coal companies of the state have accepted the new compensation act and there have been few instances reported to the bureau where the difficulties have arisen because of the intricacies of coal mining. The time for filing rejections of the compensation act will expire on the 15th for the first period and the number has been small, only a few coal producers being included. A number of coal companies have been granted exemption from necessity of carrying insurance.

Word has been received of an incident in one coal operation. It was reported that a couple of men, who were classed as not very good risks, were notified of their discharge. The mine-workers' union served notice that the rest would strike if the men were not reinstated.

Coal companies were the first to catch a fatal accident case. The majority of the larger operations in the anthracite region have been granted exemption from insurance, but a number of the large companies in the bituminous region have insured in the state.

Enforcement of the Child-Labor Act

A close watch is being kept by the state officials of the operation of the child labor law, especially in the anthracite region, because of the employment of breaker boys, and these officers are endeavoring to have some model continuation schools organized this month.

Several features of the child-labor act with reference to nonresident minors who are employed in the state and the issuance of certificates are construed by Attorney General F. S. Brown in an opinion rendered on Jan. 8.

According to Mr. Brown's opinion, the provisions of the act of 1915 do not affect in any way a minor employed on the farm or in domestic service in private homes. Domestic service in private homes refers not only to the service in the homes of the minors, but in the homes of other persons.

All minors employed in Pennsylvania, but residing in another state, must hold an employment certificate issued by the school authorities of the district in which they are employed. Their employment must be subject to the same restrictions as the employment of minors who are residents of Pennsylvania, except that they need not attend a continuation school.

In the case of a minor who resides in this state who is employed in another, the spirit of the act would be fulfilled if that minor be granted an employment certificate provided he attended a continuation school in the district of his residence or some other continuation school in the Commonwealth. However, the hours of labor and the nature of his employment outside of Pennsylvania would not be in conflict with the provisions of the child-labor act of 1915. Should the hours of employment and other conditions under which the minor would be required to work in a foreign state be not in conformity with the child-labor act, the application of that minor for an employment certificate may be refused and he would be required to attend the public school daily until he would secure such employment as would be in conformity with the child-labor act.

All old employment certificates issued prior to Jan. 1, 1916, will be valid until the holder reaches the age of 16, provided they attend a continuation school and comply with the other provisions of the child-labor act.

PENNSYLVANIA

Anthracite

Parsons—The substitution of the jig system of separating slate from coal has done away with the usual force of slate pickers in the new Baltimore No. 5 breaker of the Delaware & Hudson Co., which has been placed in operation after several months shutdown for repairs. The new breaker will prepare the coal from the old Baltimore tunnel, as well as from No. 5 colliery. This breaker has a capacity of 3,000 tons a day.

Wilkes-Barre—Owing to a dispute over the loss of coal falling from mine cars from the time they leave the mines until they reach the breaker on the opposite side of the Susquehanna River, 700 men of the Parrish Coal Co. have gone on a strike. The men maintain that as they are compelled to load the cars to their fullest capacity their pay should not be lessened because of the large loss due to the extremely long haul to the breaker.

The Lehigh Valley Coal Co. has filed an appeal from the assessment and valuation of its property in this city as fixed by the board of revision and appeals for the purpose of taxation. The appeals cover coal, surface, breakers and buildings, the total valuation is fixed at about a million dollars. The coal is assessed at $250 a foot-acre.

Pottsville—David Davis, William M. Engl and Martin Kane, three of the miners' representatives on the Mine Inspectors' Examining Board, were removed by Judge Bechtel recently, and a new board, consisting of Claude Lewis and George Keiser, engineers, and William Clements, J. J. Kelly and Peter Haley, miners, appointed in their places.

Kingston—The Kingston Coal Co. has made announcement of a number of promotions and changes which have been made of officials. A new committee of safety has been established to promote better working conditions within the mines and breakers. The new positions of general inside superintendent, mine inspector for safety and district inside superintendent have been established. The Committee of Safety is as follows: Thomas H. Williams, general inside superintendent; R. A. Smith, superintendent at the Gaylord colliery; Neil McHugh, district inside superintendent; Thomas

Martin, district inside superintendent of construction and preparation; E. L. Salmon, mechanical engineer; W. H. Bradbury, chief electrician; William Pugh, mine inspector for safety; Dr. D. H. Lake, chief surgeon.

Lansford—A number of boys employed at the Coleraine colliery who are under 16 years of age have been dismissed on account of the company being unable to comply with the provisions of the continuation-school laws, which compels boys between 14 and 16 years of age to spend eight hours each week in schools devoted to that class of pupils.

Bituminous

Vintondale—The Workmen's Compensation Bureau received the first report of a fatal accident under the compensation act from the statistical bureau of the Department of Labor and Industry on Jan. 3. It was of the death of Joseph Polimoc, an Austrian, who lost his life on a railroad of the Vinton Colliery Co. He left a wife and four children and received $10.80 a week. The second fatal accident was received from the Cambria Steel Co.

Meyersdale—Miners employed by the Garrett Smokeless Coal Co. returned to work on Jan. 8, having been granted an increase in wages. The Enterprise and Hocking mines in the same town are closed tight, the companies refusing to grant the raise demanded.

Greensburg—The largest policy written in the state workmen's compensation insurance fund was issued recently by the state to the Keystone Coal and Coke Co. and its nine subsidiary companies. The first premium was $150,700.

Charleroi—The year just past was the second best in the history of river coal trade on the Monongahela. The coal shipped through Lock No. 4 during 1915 was 204,730,000 bu., the record, attained in 1913, being 210,277,000 bu.

Jeannette—The Millwood plant of the Latrobe-Connellsville Coal and Coke Co. recently resumed operations after almost a year and a half shutdown. This plant closed down completely in August, 1914, although for many months prior thereto it had been worked only every other day.

Marianna—After a period of inactivity that has lasted for several months, the Marianna mines are to resume operations shortly. The newly organized Marianna Coal Co., backed by the Union Trust Co., of Pittsburgh, has issued employment checks to miners in the neighborhood. It is said that enough orders have been booked to keep the mines running for months ahead.

Connellsville—The H. C. Frick Coke Co., the largest producer of coke in the world, is unable to supply the demands of the United States Steel Corp. and is in the market for coke. It is many years since this condition existed before.

WEST VIRGINIA

Charleston—There was a decrease in the number of fatal accidents occurring throughout the state during the month of December as compared with the reports of preceding months. There were 25 fatalities reported during the month, of which 17 were in the coal industry.

The Interstate Commerce Commission recently suspended the proposed increase in rates on coal to Western markets until May 19. Coal operators regard this action as an initial victory in their contention against the trunk lines.

ALABAMA

Birmingham—The smallest number of fatal accidents in 21 years is the record of the Alabama coal mines for 1915. Last year there were 63 fatal accidents in the mines as against 126 in the 12 months previous. It is noticeable that there was a considerable decrease in fatalities arising from falling roof and coal. This would appear to indicate more intelligent methods of mining and better precautionary measures.

TENNESSEE

Petros—Fire was recently discovered in the state mines here and an effort to enter from the Petros side was unsuccessful on account of smoke. The mines, however, were entered from the other side of the mountain, and by the use of water buckets and hose from the pumps, the fire was extinguished before any great damage had been done. The origin of the fire is unknown.

KENTUCKY

Hazard—The Maynard Coal Co. is making rapid progress with the erection of the new tipple at the Daniel Boone mine, recently acquired. While the vein of the coal was deep, the quality was excellent, but the mine for years had been operated with old-style equipment and not nearly enough coal was secured to supply the demand.

OHIO

Athens—The New Pittsburgh Coal Co. has completed the work of erecting a crusher at Mine No. 10, in Athens County. When the mine is placed in operation the concern will have five working mines in the Hocking Valley district.

Columbus—Smoke and fumes were important elements in a civil-service examination recently given to nearly 50 applicants for the position of deputy mine inspector. Each man in turn was sent into an air-tight room in the basement of the state Capitol building, where smoke and fumes rendered breathing impossible without the oxygen helmet and mine-rescue suit, which each was compelled to wear.

Cleveland—Failure of many operators to attend the meeting held here by coal interests from four states, to discuss wage and other matters, leads to the belief that the next wage agreement will not be settled without some difficulty, and possibly extended labor troubles. About 200 operators attended.

Bellaire—The Fort Pitt Coal Co.'s mine a few miles from this city was recently sold for a consideration which was not made public. A. L. Petty purchased the property for A. R. Budd, one of the principal stockholders. It is said that the mine will be placed in operation as soon as the Court confirms the sale.

Steubenville—Fire of unknown origin recently destroyed the coal-hoisting shaft house at the La Belle mill. The blaze had gained considerable headway before the arrival of fire companies and water was played on the fire for more than an hour before it was subdued. It was with difficulty that the fire was prevented from spreading to the power house.

INDIANA

Terre Haute—Henry Russell Platt, of Chicago, trustee for the bondholders of the Dering Coal Co., has transferred to the J. K. Dering Coal Co., of Chicago, 1,350 acres of coal lands in Vigo County, Indiana, for a consideration of $277,249, the buyer filing a mortgage to the Continental and Commercial Trust Savings Bank, Chicago, for $174,074. The Dering Coal Co. had been in receiver's hands since 1909. The purchaser of the old properties is a reorganization of the company, J. K. Dering, the principal stockholder in the new corporation, having been interested in the old one. The new company, in addition to operating the former leased mines, will develop new ones.

ILLINOIS

Johnston City—The wash house at the McClintock mine burned recently with considerable damage. Snow and ice proved an important factor in preventing the fire from spreading to other buildings. The mine is the property of the Searles Coal Co. of St. Louis.

Benton—Operations have begun at the new Middle Fork mine, of the Middle Fork Mining Co., east of here, on the Illinois Central and the Chicago & Eastern Illinois railroads. Up to this time mine-run only has been produced, but in a few days the company will be preparing domestic sizes. The company has several thousand acres of land and the mine is to be operated by electricity.

COLORADO

Trinidad—Seth Low, of New York, and Patrick Gilday, of Pennsylvania, two members of the Federal commission appointed more than a year ago by President Wilson, to investigate the labor conditions in Colorado, entered the southern Colorado coal fields on Jan. 3 to prosecute an inquiry. Various camps of the Colorado Fuel and Iron Co. will be visited for the purpose of examining into the conditions prevailing under the industrial system recently inaugurated.

PERSONALS

W. C. August, of Nokomis, Ill., has been appointed assistant superintendent of the Peabody Coal Co., which operates about 50 mines in Illinois.

Chief of the Department of Mines, James E. Roderick, has announced that he has assigned the sixth anthracite district to David T. Williams, of Scranton, over whose status there had been some question.

Chief Mine Inspector Earl A. Henry has appointed George R. Cook, of Harrison County, as a district mine inspector in the first district of West Virginia, succeeding Clarence N. Orr, who resigned recently.

Charles Enzain, for some time district representative of the Federal Bureau of Mines in Wilkes-Barre, Penn., has been transferred to Pittsburgh, where he becomes chief engineer of the sub-bureau at that point.

The Lackawanna (Penn.) County Court has appointed Thomas R. Thomas, Harry Fletcher, Patrick Kilcullen, Isaac

Smith and W. F. Sekol to be members of the Board for Examination of candidates for mine inspectors.

C. G. Hall, chief fuel agent of the Chicago & Eastern Illinois Railroad Co., has resigned to take charge of the fuel department of a Terre Haute, Ind., corporation. He has been succeeded by S. J. Alexander, promoted.

Dr. Jesse H. Hughes has been appointed chief of staff of the Susquehanna Coal Co.'s Safety-First Committee. The Susquehanna is contemplating permanent plans for an emergency hospital which, when erected, will be one of the finest in the anthracite region.

R. H. Buchanan, of Pottsville, has been appointed chief engineer of the coal department of the Delaware & Hudson Co., taking the place of E. S. Van Horn, who has been promoted to superintendent of the company's collieries in the Olyphant district.

Ralph G. Wilfong has resigned his position with the Beaver Coal Co. with which he has been connected for several years past, to accept the post of assistant superintendent of the Pemberton Coal and Coke Co. at Pemberton, W. Va. He will enter upon his new duties at once.

Patrick F. Walsh, of Plains, Penn., has been appointed international organizer of the United Mine Workers of America. The position comes to Mr. Walsh, who is well fitted for the work, as a recognition of his heroism in rescuing three fellow miners in a cave-in at one of the mines of the Pennsylvania Coal Co.

Louis Blazic is said to hold the world's coal-loading record. On Dec. 29 at the Lekrone No. 1 mine, he loaded forty-one 40-bu. cars in one day, or he handled a total of 1,640 bu. between 5:30 a.m. and 4:45 p.m. Four men attempted the record at this mine, the other three loading respectively 40, 35 and 28 cars.

George Horn, an expert accountant, who for some years has been with the Lehigh Coal and Navigation Co. and the Central R.R. of New Jersey, has been appointed by the Navigation company as chief accountant of its canal department. This department is removing its offices back to Mauch Chunk from Bethlehem.

H. A. Sangerlet, superintendent of the Nigger Hollow mine, west of Belleville, Ill., was seriously injured recently when he was struck by a mine car running wild. The car was the last of a trip being hauled away from the mouth of the shaft. It became detached and ran back down the incline. Sangerlet, standing on the track, was hurled several feet and struck on his head.

Vance C. McCormick, who was the Democratic candidate for Governor of Pennsylvania in 1914, was appointed by the Federal Reserve Board on Jan. 6 as a Class C director of the Philadelphia Reserve Bank. Mr. McCormick is a well-known financier, and is heavily interested in a large number of coal companies in Pennsylvania and other states. He is 44 years old and a graduate of Yale University, of which he is now trustee.

R. S. Feeny, manager of the Philadelphia office of H. H. Lineaweaver & Co., Inc., coal operators, has been promoted to sales manager of the New York City offices. A. B. Crane, formerly connected with the New York offices, comes to Philadelphia as manager in charge of the bituminous interests of the company. Another change made by the company consists of the promotion of D. F. Hammond, of the Lebanon, Penn., office, to a position in this city.

OBITUARY

David R. James, 52 years old, died on Jan. 5. He was one of the wealthiest coal operators in the Schuylkill, Penn., region, being the senior member and general manager of the Cambridge Coal Co. Mr. James was also president of the Cambridge Slate Co. Until he became heavily interested in the East Bear Ridge and the Girard Mammoth Coal Co. collieries, he was a leading mine expert in this section. He was president of the council for 15 years, director of the First National Bank, and prominent in fraternal orders. Mr. James was a prominent Republican and served several times as a delegate to both state and national conventions.

INDUSTRIAL NEWS

Pikeville, Ky.—The Kewanee Coal Co. has been organized with a capital stock of $10,000. The incorporators are O. P. Chatfield, J. B. Rogers, and L. M. Davis.

Loving, Tex.—The Loving Coal Co. has been organized with a capital of $100,000. The incorporators are W. L. Andrews, R. D. Andrews and R. O. Andrews.

Covington, Ky.—The Lignite Washed Coal Co. has been incorporated by Maurice L. Galvin, John Hoffman and others, with a capital stock of $10,000, to operate in eastern Kentucky.

Johnstown, Penn.—The Sunnyside Coal Co. has sold its properties in this vicinity to the Ideal Coal Co., which plans to start active operation and mine 25,000 tons of coal per month.

Cleveland, Ohio—The Pittsburgh & Cleveland Coal Co. has been incorporated with a capital of $100,000 by Gustav Von der Steinen, C. H. Horn, J. B. Putnam, I. L. Evans and Paul J. Bickel.

Knoxville, Tenn.—The Oldroyd Machine Co., which will make a coal-cutting machine, has incorporated here with $50,000 capital, the incorporators being C. S. Oldroyd, J. R. Foster, E. H. Ford and others.

Philadelphia, Penn.—The use of anthracite coal in the West Indies continues to grow. Recently the Danish steamship "Ulrik Holm" left this port with a cargo of 2,300 tons of this class of coal for Cuba.

Cleveland, Ohio—S. H. Mead, for 28 years associated with the Ohio and Pennsylvania Coal Co., has opened offices at 1529 Rockefeller Building, under the name of S. H. Mead & Son, for a general business in coal and coke.

Columbus, Ohio—Secretary B. F. Nigh, of the Michigan-Ohio-Indiana Coal Association makes the announcement that the regular midwinter meeting of the officers and directors of the organization will be held at Toledo, Jan. 26 and 27.

Catawissa, Penn.—After laboring three days and nights, a large force of men has extinguished a fire in a pile of 35,000 tons of coal in the yards of the Philadelphia & Reading Railway Co. The fire was caused by spontaneous combustion.

Huntington, W. Va.—The annual coal-loading report of the Chesapeake & Ohio R.R. shows that the loadings for 1915 exceed those for the previous year by approximately 3,000,000 tons. During 1915, 25,158,765 tons were handled by the road.

Toronto, Canada—The Hay River Coal Co., Ltd., has been incorporated by Gerard Ruel, Archibald J. Reid, Samuel R. Biggs and others representing the Mackenzie & Mann interests, to mine coal and other minerals with an authorized capital of $100,000.

Jeannette, Penn.—The Whyel Gas Co. has begun the development of the Robert Gaup heirs tract of 111 acres of coal land near Yukon. The company recently bought this land for $1,200 per acre. It is said that 100 new miner's houses will be built at Yukon before spring.

Middlesboro, Ky.—The Jeffrey Manufacturing Co., of Columbus, Ohio, through its Middlesboro representative, recently sold 18 "arcwall" mining machines to the Stonega Coke and Coal Co. This makes the largest sale of mining machines to one company during the year.

Baltimore, Md.—All records for coal-tonnage production by the Consolidation Coal Co. were broken during the past year. The total output for the 12 months ending with December is estimated at 11,710,155 tons as compared with an actual tonnage of 10,710,017 tons in 1913.

Chicago, Ill.—The Absence of representatives from Pennsylvania led to an adjournment on Jan. 6 of the conference of officials of the United Mine Workers of America, and the mine operators in the central competitive field. This adjournment is until Jan. 17 at Indianapolis.

Louisville, Ky.—The Hazard Coal Co. has filed amended articles of incorporation, increasing the amount of liabilities it may assume from $25,000 to $50,000. The amendment was signed by Robert Wedekind, John P. Gorham and W. L. Polk as owners of more than two-thirds of the capital stock.

Chattanooga, Tenn.—An attempt to organize a miner's union among the employees of the Chattanooga Iron and Coal Co. resulted in a lockout and closing of the mines at Dunlap, Sequatchie County; 190 men are affected by this trouble, and both sides seem to be determined in their stand.

Anchor, Ky.—A new coal-mining company is being organized by Grenville Lewis, of Anchor, Ky., superintendent of the R. C. Tway Mining Co., and W. A. Hutchinson, of Knoxville, Tenn., to develop and operate a 550-acre lease in the Harlan, Ky., field on the Louisville & Nashville R.R. on which option is now held.

Pittsburgh, Penn.—The Natalie Coal Co. has been sold to the Madeira Hill Co. for $2,000,000. The company's property at Mt. Carmel, Penn., comprises nine mines. The temporary

agreement has been signed, and the confirmation is subject only to legal technicalities, and the final transfer will shortly be made.

Buffalo, N. Y.—The Delaware, Lackawanna & Western Coal Co. is in line for loading winter-storage coal, but is not able to obtain tonnage till the grain fleet is unloaded to some extent. Only one cargo has been loaded. Rates to Lake Michigan are expected to advance next season, as the fleet will want to go to Lake Superior for grain.

Boston, Mass.—The Bailey Meter Co. has been incorporated under the laws of Massachusetts to manufacture and sell a line of recording meters and instruments for power plants and other similar uses. This line of meters embodies simplicity of design and durability of construction. They work continuously under severe power-plant conditions.

Huntington, W. Va.—The Kenova Mine Car Co. it is said will be in operation by Feb. 15. It is stated that the only difficulty now is a delay on account of the delivery of machinery, but that promise has been given to the effect that prompt deliveries will be made, and it will be possible to construct the first mine car by the date above mentioned.

Amherstdale, W. Va.—The Prockter Coal Co. recently contracted with the Fairmont Mining Machinery Co. for a complete tipple equipment consisting of conveyors, shaking screens and loading booms for loading on three tracks. The Main Island Creek Coal Co., of Omar, W. Va., also contracted with the same firm for three complete shaker screen tipple equipments for three tracks.

Columbus, Ohio—Coal men in Columbus are up in arms over an ordinance which has been prepared by W. D. Ranney, smoke inspector, which provides that coal showing more than 20 per cent. volatile matter cannot be used in furnaces of private houses without the use of specially constructed downdraft apparatus. If the ordinance is enacted it will practically eliminate the use of Ohio-mined coal by present furnaces.

Glace Bay, N. S.—Contrary to previous estimates the output of coal by the Dominion Coal Co. for 1915 exceeded that of 1914, being approximately 4,610,000 tons from the Glace Bay collieries, and 400,000 tons from Spring Hill, a total of 5,010,000 tons, as compared with 4,705,133 tons for the previous year. The total production of all the Nova Scotia mines for 1915 is approximately 6,707,000 tons as against 6,643,263 tons in 1914.

Knoxville, Tenn.—The partnership of Myers & Whaley, consulting, civil, mining and mechanical engineers of Knoxville, which has been in operation for over nine years, has been dissolved. R. V. Myers continues his office as civil and mining engineer at 1220 Holston Bank Building, Knoxville, while William Whaley will devote his time to the affairs of the Myers-Whaley Co., bulding shoveling machines under the Whaley patents.

New Orleans, La.—The barge "City of San Antonio," of the fleet of the R. P. Hyams Coal Co., of this city, which drifted helplessly about in the Gulf of Mexico for a number of days, was sighted recently by the Southern Pacific steamer "Excelsior," 225 mi. off Southwest Pass, and was towed to Havana, Cuba. Four men on the barge were reported safe. The "City of San Antonio" was torn from the tug "Daniel Williard" during a storm, Dec. 24.

St. Louis, Mo.—Moving pictures showing mining operations at the Staunton mine of the Mt. Olive & Staunton Coal Co., were exhibited recently at various St. Louis theaters. The pictures, intended to show the importance of St. Louis as a coal center, were taken a mile back from the shaft and 325 ft. underground. With the aid of arc lights good pictures were obtained. They showed every step in the mining of the coal, from the face to the surface.

Birmingham, Ala.—A barge line company is being formed by the various coal companies located on or near the Warrier River to handle the shipments of coal down that stream to Mobile and New Orleans instead of each company operating its own line of barges. The companies interested in the plan are the Pratt Consolidated Coal Co., the Sloss-Sheffield Steel and Iron Co., the Corona Coal Co., the Empire Coal Co., the Maryland Coal Co., and others.

Denver, Colo.—Indictment against leaders of the United Mine Workers of America returned by the United States grand jury at Pueblo in December, 1913, and growing out of activities in the coal miners' strike were dismissed Jan. 8 on motion of Harry B. Tedrow, United States District Attorney. One of these indictments named 23 defendants, and charged a conspiracy of the officials to interfere with interstate commerce through the conduct of the Colorado coal strike.

Crewe, Va.—The Buffalo Coal Co. has been incorporated with a maximum capitalization of $300,000 and a minimum of $150,000. The purpose of the firm is the mining of coal, and the incorporators are C. E. Wilson, president, of Crewe, Va., R. B. Wilson, vice-president, of Richmond, Va., and T. C. Berger, secretary and treasurer, of Chattaroy, W. Va. The same people have organized the Mary Helen Coal Corporation, with a maximum capital of $200,000, and a minimum of $150,000.

Wellsburg, W. Va.—It is reported that between 12 and 15 million dollars will be expended in building industrial plants and coke ovens in the Beech Bottom Valley, above Wheeling, in the near future. The property of the American Gas and Electrical Co., which is now building a power plant at this place, consists of 112 acres, while the land northward from this site in the river valley for three miles is under option. It is believed that a railroad will be constructed across Brooke County to bring fuel to the river.

St. Louis, Mo.—Mayor Kiel has signed the ordinance passed by the Board of Aldermen for the building of a municipal dock and warehouse at the foot of North Market St., at a cost of $285,000, to facilitate the handling of coal and other commodities. Projects are under way for the building of other docks. At the request of the Board of Public Service $15,000 has been provided for the immediate erection of a temporary dock to care for shipping until the permanent dock is ready. The temporary dock will be placed at the foot of O'Fallon St. or at the foot of Victor St.

Seattle, Wash.—The coal camps in Washington are feeling an increase in the demand for coke. Practically the entire Pacific Coast is dependent upon Washington for its supply of this fuel, and as a result not only the mines producing a coking coal, but the ovens of the state are being worked to their fullest capacity. It is said that operators are going over the field looking for coking coal, and if experiments with the coals obtained prove successful, extensive fields which are now idle will be opened at once.

Toronto, Ont.—An order in council issued by the British Government requisitioning all vessels in the foreign trade for government service, is applicable to the vessels chartered by the Dominion Coal Co., now in Montreal. Any of the 25 boats constituting the company's fleet are likely to be taken under this order, as coal boats are always in demand, and the majority of the company's vessels having been built especially for the coal trade are typical of the class now needed since England is now supplying all France with coal. The requisition will seriously interfere with the trade of the company during the coming season.

Whitesburg, Ky.—According to information received here, the By-Products Coke Corporation has purchased a large area of Black Mountain, Va., coal lands from the Black Mountain Coal Lands Corporation, with the view of making extensive developments during the current year. The purchase is said to have included some 6,000 acres. Benjamin L. Dulaney, head of the Black Mountain corporation, is quoted as saying that Chicago and Syracuse interests are behind the deal and that the properties will be operated on a large scale and the products shipped to the Eastern market by way of Charleston, S. C. Mr. Dulaney confirmed the report that he will retire from the Black Mountain corporation shortly.

Youngstown, Ohio—The most serious labor trouble in Ohio in several years occurred last week in East Youngstown among strikers from the plants of the Youngstown Sheet and Tube Co. and the Republic Iron and Steel Co. About 12,000 men were out and several thousand of these precipitated a violent outbreak on Friday, Jan. 7, setting fire to the business section of East Youngstown and destroying property valued at from $500,000 to $1,000,000. The men, most of whom are unskilled foreign laborers, got beyond the control of the union leaders and took possession of the town until the militia arrived. The Republic Iron and Steel Co. is considering shutting down its enormous coke plants until the trouble is over.

Morton, Wash.—There is a rumor floating around this country that the Davis anthracite coal mines, located a few miles east of Morton, have been sold to Eastern capitalists, who contemplate building an extension railroad to connect with the Tacoma Eastern R.R. either here or at Tacoma. No absolute verification for this story, nor a flat denial is obtainable. It has been authoritatively stated here that Davis Brothers have obtained a clear patent for their claims, and the fact that the coal is of the best quality has long been established. An official of the Tacoma Eastern R.R. is quoted as having told a Morton resident that the immediate extension of that line to Morton is practically assured, and it is believed that the rumor has been raised by a connection between these two statements. There is a big demand for the Morton coal at Tacoma and surrounding points, and it is believed that should this railroad be completed, Morton will become a busy mining center.

Market Department

General Review

Anthracite consumers pushed for tonnage. Improved car supply and milder weather cause a slight easing up in bituminous. Rumors of large tonnages negotiated for export. Reactionary tendency at interior points, though the Middle West continues firm.

Anthracite—Each week sees new evidence of the strenuous efforts being made to overcome the deficiency of two million tons in the anthracite shipments. Consuming interests are severely taxed to obtain sufficient tonnage for their immediate requirements, and with the labor crisis only eleven weeks off, and no indications of any slowing up in the interim, the situation is replete with serious possibilities. Fair weather has permtted an active movement, but without relieving the insistent demand to any notable extent. The big companies are practically declining to accept further orders for delivery prior to Apr. 1, so that this business is being diverted to the individuals who are exacting substantial premiums. Even in those instances where jobbing and consuming interests have fairly large stocks, they are tentatively in the market for any loose tonnage that may appear.

Bituminous—A distinct improvement in the car situation, accompanied by milder weather the early part of the week, did much to relieve the pressure on the soft-coal market though the demand continues urgent. The embargoes have been greatly modified and the car supply has reached a point where some shippers report it as good. Substantial premiums are still obtainable for coal at the distributing centers, though the situation is rather mixed at the moment and hinging a great deal on the weather conditions; a snow storm and lower temperatures, interrupting deliveries and causing increased consumption would stiffen the market up rapidly and even as it is, no serious reaction seems possible with the impending wage agreement so near at hand. The softness developed to uncomfortable proportions at some points where it was noted that some coal even went on demurrage for a short time.

Exports—With ocean freights once more reaching out to new high levels, chartering is again restricted. Only the most acute necessity will now force the foreign purchaser to meet prevailing ocean freights. The action of the Italian Government in withdrawing a large number of steamers used in coal transport for government service, has tended to tighten the situation still further, but in spite of this fact the movement for the past two or three weeks shows a substantial gain over the same number of weeks preceding. Rumors are also current that some heavy shipments have been arranged for February.

Ohio Valley—There has been a notable easing up in the Pittsburgh district. Exact prices are difficult to quote but are definitely lower than a week ago, and the situation is rather mixed at the moment. A full demand is expected to prevail until Apr. 1, but this will be mostly for storage coal, a business which does not ordinarily command very profitable figures. The present reactionary tendency may be further ascribed to the slowing-up characteristic of the period immediately succeeding the holidays. There has been no letup to the insistent demand from steam consumers, while the railroads continue heavy buyers of surplus tonnage for stocking purposes.

Middle West—Decidedly colder weather has created a rush of orders from all directions which have severely taxed the resources of the agencies to meet, because of the depleted condition of stocks. The steam demand is particularly urgent, and the surplus tonnages of these grades are being rapidly cleaned up. A fairly large tonnage is being moved for storage purposes, which has also proved a substantial benefit, but the feeling is rapidly spreading that there will be no suspension in operations Apr. 1, and if this gains sufficient ground, there is the possibility of a sharp reaction in the market. The final appearance of severe winter weather in the Northwest has proved a tremendous impetus to the movement out from the upper Lake docks, where the loading facilities are being strained to the limit.

A Year Ago.—Anthracite under heavy pressure, with operations rigidly curtailed. Bituminous steady and showing occasional gains. Stocks reduced by the holiday curtailment. Urgent business in the Middle West.

BUSINESS OPINIONS

Boston News Bureau—Although bank clearings, the surest index of the business tide, for December made a record never before equalled, overtopping October by a handsome amount but exceeding the previous monthly record by some 20%; although iron production—perhaps a more fundamental barometer, broke all records for December; in short, though the trade of the country is forging ahead at break-neck speed the standard securities representing the equities in the greatest American industries are quoted lower than four months ago. The situation cannot be explained away by money market developments, for money is virtually the cheapest commodity in the United States.

Iron Age—The strikes and riot at Youngstown iron and steel plants were a startling development of the opening week of the new year. In showing the explosive possibilities of the labor situation, these events have confirmed fears for some time expressed in the steel trade. The Steel Corporation's announcement of a general wage advance, to take effect Feb. 1, amounting to more than 10 per cent. for common labor, was followed by similar advances by independent companies, these for the most part being made effective Jan. 1. Merchant blast furnaces took like action, so that within a few days practically the entire industry stepped up to the highest level of wages it has ever paid.

Bradstreet—Wholesale trade is marked by less than the usual seasonal dullness, jobbers continue busy on filling-in orders and new spring business, retail trade is stimulated by post-holiday sales as well as by cold weather over a wide area, industry proceeds at high speed, and a remarkable degree of unanimity exists as to the very favorable character of prospects for 1916, most signs pointing to a record business. The first week of 1916 sees inventorying practically completed, many salesmen on the road or preparing to go out, manufacturers booked far ahead, spring orders coming out satisfactorily, evidences of low stocks throughout the country and a steady, insistent demand for prompt shipment of various kinds of goods.

Dun—Preparations for the further extension of American enterprise are undertaken with increased vigor at the end of the holiday season. Domestic finances are in an unusually sound position and funds continue superabundant for all legitimate requirements, while there is no lack of the confidence essential to the launching and promotion of important projects. In the latter respect, present conditions afford a striking contrast to those existing twelve months ago and, moreover, all of the statistical barometers emphasize the changed situation prevailing at the opening of 1916.

Dry Goods Economist—All kinds of staple and fancy cottons are especially active and in some cases the prices reached are almost of record character. Important lines of prints have been advanced ½ cent and of percales ¼ cent a yard. Jobbers report the largest advance order business on dress goods in years. Manufacturers of women's garments are adding to their lines of cotton materials, especially in heavy weight fabrics for skirting purposes. Raw cotton continues firm, with record high quotations in Liverpool.

American Wool and Cotton Reporter—The advance in freight rates from $20 to $30 per bale on wool from South America was the feature of the week under review. Two years ago the rates were only $4 a bale. There is not much South American wool on hand, and it is not expected that very much will come forward. Large amounts have already been forwarded to the mills direct, and comparatively small quantities are in the hands of the dealers.

Marshall Field & Co.—Sales for spring delivery have been so far in excess of the past two or three years that wholesale distribution of dry goods will show excellent gains over the corresponding period of a year ago. Road sales for immediate and spring delivery have been about normal, though more customers have been in the market than a year ago. Collections are normal.

ATLANTIC SEABOARD

BOSTON

Improved movement of boats a factor in hardening the Hampton Roads situation. Delivered prices unchanged. Georges Creek receipts light and Pennsylvania shippers embarrassed by embargoes. Water freights still high. Anthracite comes forward very slowly.

Bituminous—The market on Pocahontas and New River continues without material change. A better movement of boats and a somewhat shortened car supply is making the Hampton Roads shippers anxious about loading, for already there are delays. There is practically no shading of the $2.85 price. Agencies who were pressed with accumulations a fortnight ago are urging the mines to keep output up to requirements. It is understood that a large tonnage for export has been arranged for February and should dispatch get slow at Hampton Roads it would make the New England situation all the more serious. At the same time the demand is spotty, and while delivered prices have not receded any on new business, the market easily absorbing what is offered, yet it is doubtful whether any volume could be sent forward without affecting prices.

Embargoes are still the rule on most of the connecting roads for shipments into this territory. Since Jan. 5 a large section of New England dependent on service all-rail from the mines has been effectually cut off from usual sources of supply. The New Haven R.R. a week ago had 46,000 freight cars on its line where 39,000 is considered the maximum for easy movement. Complaint is made that much of the trouble is due to additional coal traffic all-rail on account of the shortage of boats on the coast.

There is very little Georges Creek coming to this market. What comes is from Baltimore; New York and Philadelphia loading being now practically out of the question. In most cases Georges Creek barges are continuing to load at Hampton Roads.

The Pennsylvania grades are very little heard from these days. Between the operators who confine their efforts to filling contracts and those who have already sold more at high prices than they can possibly deliver in season there are few quotations. There is no easing off in prices: but the in-and-out buyers are losing their interest in rail coal because of the extremely long time it takes to come through. There are cars loaded in November that are still en route.

Water Freights—There is still a great dearth of transportation from all the loading ports. Rates are still quoted at $3.25@3.50 but available space is so far off that both owners and merchants are reluctant to fix charters on the present basis; $2.25 has been paid New York to Providence and a lot of small coasters, 200 to 350 tons having been requisitioned for this service at rates from $1.75 up. They are particularly undesirable because they are hard to discharge.

Anthracite—Shipments from all points are the slowest thus far. The New York shippers are able to do very little for dealers in this territory and Philadelphia factors are apparently unable to handle the extra business that is turned in their direction. Receipts at the loading piers are not well assorted as to sizes but Eastern dealers are grateful for what they can get. To say that they are anxious over the outlook is expressing it mildly.

Bituminous prices, f.o.b. loading port at points designated, are about as follows, per gross ton:

	Philadelphia	New York	Baltimore	F.o.b. Mine
Clearfields	$4.00@4.50	$4.25@4.80	.....	$2.75@3.25
Cambrias and Somersets	4.25@4.75	4.50@5.00	.....	3.00@3.40
Georges Creek	.....	.....	.....	.....

Pocahontas and New River are still quoted $2.85 f.o.b. Norfolk and Newport News, Va. On cars at Boston prices are $6.75@7, and the same at Providence.

NEW YORK

Anthracite demand heavy. Individuals getting premiums on stove and nut sizes and steam coals strong. No slowing down in bituminous. Mine prices high. Ohio and Pittsburgh coals offered in local market.

Anthracite—Demand for anthracite continues heavy. The mild weather has greatly aided in easing the situation and has enabled the railroads to get some of the coal tied up in the freight congestion to Tidewater. Shippers who do not own their own boats are having difficulty to secure bottoms as vessels are scarce and rates high.

The companies have about all they can do to take care of their regular trade and some large consumers are endeavoring to pick up loose lots among middlemen. Supply of all the prepared sizes is about evenly divided; where one dock is short of any one size another is long. Egg seems to be more plentiful than either stove or nut, some shippers getting premiums of from 10 to 20c. on the latter grades. New York shippers with mine connections are receiving urgent calls from New England and are quoting $4.75 at the mine for nut and stove.

The steam coals continue short and good prices are being obtained. Current quotations, gross tons, f.o.b. Tidewater, follow:

	Lower Ports		Upper Ports	
	Circular	Individual	Circular	Individual
Broken	$5.05		$5.10	
Egg	5.30	$5.30@5.30	5.35	$5.35@5.35
Stove	5.30	5.30@5.40	5.35	5.35@5.45
Chestnut	5.55	5.55@5.65	5.60	5.60@5.70
Pea	3.50	4.20@4.45	3.55	4.25@4.50
Buckwheat	2.75	3.20@3.45	2.80	3.25@3.50
Rice	2.25	2.95@3.20	2.30	3.00@3.25
Barley	1.75	2.20@2.45	1.80	2.25@2.50

Bituminous—There has been no relaxation in either demand or prices for bituminous coal. The market continues at the high f.o.b. figures of the past few weeks while the mine prices are subject to conditions on the railroad over which the coal is handled. For this reason New York shippers as a rule refuse to quote mine prices unless the particular road is named over which shipment is to be made. Mine prices for coals shipped over the Pennsylvania range from $2.25@2.75; over the New York Central from $2.75@3; over the Baltimore & Ohio from $2.50@3, and over the B., R. & P. from $2.50@2.75. In some instances two or more of these roads ship from the same region but prices vary.

Embargoes continue in force at South Amboy and on the various roads. Because of the embargo on shipments to New England points, there has been an increased movement of Pocahontas and New River coals to this section.

Eastern Ohio coals are being quoted to the New York trade at from $2.25@2.50, plus the freight, and other shippers are offering Pittsburgh coals at low prices. Tidewater quotations for good grades continue to range from $4.25@4.50, with gas coal at $4. Slack is offered at from $1.75@1.85.

Quotations on various grades, gross tons, f.o.b., Tidewater follow:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek Big Vein	$4.55@4.80	$4.55@4.80	$4.55@4.80	$3.00@3.25
Georges Creek Tyson	4.30@4.55	4.30@4.55	4.30@4.80	2.75@3.00
Clearfield:				
Medium	4.30@4.55	4.30@4.55	.....	2.75@3.00
Ordinary	4.15@4.40	4.15@4.40	.....	2.60@2.85
Broad Top Mountain	.....	.....	.....	2.60@3.00
Cambria County:				
South Forks	4.30@4.55	.....	.....	2.75@3.00
Nanty Glo	4.30@4.55	.....	.....	2.75@3.00
Barnesboro	4.30@4.55	.....	.....	2.75@3.00
Somerset County:				
Quemahoning	.....	4.30@4.55	4.30@4.55	2.75@3.00
Medium	4.20@4.40	4.20@4.40	4.20@4.40	2.65@2.85
Latrobe	4.15@4.35	.....	.....	2.60@2.80
Greensburg	4.15@4.35	.....	.....	2.60@2.80
Westmoreland	4.25@4.40	.....	.....	2.50@2.75
West Virginia Fairmont ¾		3.80@3.90	3.80@3.90	2.00@2.10
Fairmont mine-run		3.80@3.90	3.80@3.90	2.00@2.10
Steam		4.05@4.30	4.05@4.30	2.50@2.75
Western Maryland		4.15@4.30	4.15@4.30	2.50@2.75

PHILADELPHIA

Anthracite continues in heavy demand. Steam coal all taken. All sizes move rapidly at new prices, pea especially. Bituminous off, but demand still insistent. Car supply better.

Anthracite—It is now only eleven weeks before the labor crisis and the trade is doing its utmost to prepare for any contingency that may arise. The steam buyers commenced earlier than the retail dealers and are paying fancy prices for bituminous as well as for the small sizes of anthracite. No. 1 buckwheat sold this week at higher prices than pea coal was offered at last summer.

The car shortage is very serious and there are many more foreign cars in this territory than usual. The books of the big companies are overcrowded with orders for all sizes, and most of them are refusing to make further quotations on steam sizes. Orders for thousands of tons have been rejected the past week at full circular prices and the prospective buyer is forced to fall back on the individuals. There now seems to be a truce in the price war among the retailers.

All broken coal could probably be sold at full circular of $3.60, if it was not necessary to take care of contracts at $3.35. Gas companies, furnaces, etc., are insistent in their demands for this size in order to store a few months' supply, and all shippers report their orders far behind. Egg coal has no particular strength, but it is gaining daily and maintains the full circular price without difficulty. It is quite likely that consumers of broken will extend their supply mixing egg coal. All good grades of stove are far over-sold and noth-

ing less than $4.10 is being quoted regardless of the reputation of the coal. Chestnut is still the leader; all grades are bringing $4.25 and will continue to do so, unless the big companies flood the market with storage coal.

Pea coal surprised the big shippers by responding so promptly to the advance. Many dealers have fairly large stocks on hand, but are buying additional coal for present needs, as there can be no loss in carrying this grade. It is possible that the pea-coal market may undergo a change the same as chestnut. The big companies can ship enough into the market from their storage piles to make all hands call a halt. This might cause the small operators to reduce the price. The demand for the buckwheats is brisk and they are bringing the full circular in all instances; in some cases No. 1 is bringing $1.75 and occasionally $2, while No. 2 or rice, with a circular price of 90c., is known to have sold frequently at $1.

No fault can be found with collections.

Prices, f.o.b. cars, at mines, per gross ton, for line trade and f.o.b. Port Richmond, are as follows:

	Line	Tide		Line	Tide
Broken	$3.60	$4.85	Pea	$2.55	$3.30
Egg	3.85	5.10	Buckwheat	1.55	2.30
Stove	4.10	5.10	Rice	.90	1.80
Chestnut	4.25	5.35	Barley	.55	1.30

Bituminous—The close of the week saw some easing off so far as new orders were concerned; apparently the coal stored by industrial plants has reached such a point that the market for the moment depends on the weather. However, consumers are still insistent on having their orders filled. The greatest difficulty is still experienced in getting coal forward, due to the embargoes, although some of these have been modified. The car supply in some districts is good. Earlier in the week prices moved upward, but eased off later, until they are now about the same as the previous week, excepting some slack grades, which remain quite tight. The average prices per gross ton are as follows:

Georges Creek Big Vein	$3.00@3.25	Fairmont gas, ¾	$2.15@2.25
South Fork Miller Vein	2.80@2.90	Fairmont gas, mine-run	2.00@2.10
Clearfield (ordinary)	2.70@2.85	Fairmont gas, slack	1.80@1.95
Somerset (ordinary)	2.70@2.80	Fairmont lump, ordinary	2.00@2.10
West Va. Freeport	2.40@2.50	Fairmont mine-run	1.90@1.95
		Fairmont slack	1.80@1.95

BALTIMORE

Signs of weakness in the bituminous trade. Coal still coming in from Virginia and West. Wage increase in Myersdale region.

A big change swept over the market on Tuesday when the Baltimore & Ohio announced an embargo on all shipments by way of the Cumberland Valley and Western Maryland northward. The market, which had held for good coals, at from $2.75 to $3, mine basis for some time, went off sharply for the first day about 50 to 75c. a ton. Coal was offered at a wide range, but the tendency was to await a shake-down of conditions before closing anything material.

Coal is still coming all-rail and barge to Baltimore from the New River and Pocahontas operations, in competition with the regular coals used here. The basis was very close, however, and except for some contracts of the kind that will run for probably a month or so, this line is apparently due for a break as soon as coals from Pennsylvania and West Virginia shade off a little more. Western coals too are finding some outlet on the B. & O. and Western Maryland that usually take coals handled here.

Sales, dictated by the needs of the moment, have had a fairly wide range in soft coal and quotations are about as follows:

	Mines	Balt.*	Fairmont	Mines	Balt.*
Geo. Crk. Big Vein	$3.00	$4.18	Ordinary mine run	$1.75	$3.23
Geo. Crk. Tyson	2.75	3.93	Ordinary ¾	1.85	3.33
Clearfield	2.60	3.78	Ordinary slack	1.60	3.08
South Fork	2.75	3.93	Low sulphur mine-run	Out of market	
Latrobe	2.50	3.68	Low sulphur ¾	Out of market	
Somerset (best)	2.75	3.93	Low sulphur slack	Out of market	
Somerset (good)	2.50	3.68			
Quemahoning	2.75	3.93			
Freeport	2.40	3.58			
Miller Vein	2.75	3.93			

* F. o. b., outside Capes.

HAMPTON ROADS

Movement less than anticipated. Italian Government takes over a large number of vessels. Accumulation at Tidewater large.

Dumpings at Hampton Roads ports for the week have shown up well considering existing conditions. The cold weather has caused the coal to freeze to the cars, making the dumping difficult, as in a great many instances it had to be picked from the sides and bottoms of the cars. The movement of export coal has not been so heavy as anticipated. The largest cargo of the week was that loaded into the collier "Achilles," which took 12,000 tons and a supply of bunkers amounting to about 1,150 tons. The fact that the Italian Government has taken over a large number of the steamers which formerly loaded cargoes here for Italian ports is no doubt responsible for the falling off in the movement to Italy.

Shipments coastwise have gone to nearly all of the New England ports with a few small cargoes South. Barges are taking care of a large percentage of the coastwise movement and schooners are still being used for the export cargoes. Rates of freight for both foreign and coastwise business are high and vessel tonnage is difficult to get.

The number of bunker vessels calling at Hampton Roads has only been fair and no extra large supply has been given any one vessel. Prices for bunker coal are $3.10 per ton plus 10c. for trimming, or 20c. per ton trimmed less than for last year.

Railroad Tonnages—Dumpings over the local piers for the past five weeks compare as follows:

	Week Ending				
Railroad	Dec. 11	Dec. 18	Dec. 25	Jan. 1	Jan. 8
Norfolk & Western	87,726	104,942	162,494	112,613	122,342
Chesapeake & Ohio	70,535	55,503	96,620	91,177	92 235
Virginian	52,247	61,728	54,132	66,990	64,428
Totals	210,508	222,173	313,246	270,780	279,005

Ocean Charters, Clearances and Freights

VESSEL CLEARANCES

The following steamers have cleared from various ports during the week ended Jan. 8:

NORFOLK

Vessel	Destination	Tons
J. Olson[3]	Kingston	2,000
Tallac[2]	Ceinfuegos	1,536
Achilles[6]	Cristobal	12,000
American[2]	St. Georges	650
Wm.C.May[2]	Cartagena	1,100
Teviotdale[4]	Savona	4,851
Deipara	Genoa	2,786
P.Pendleton[5]	Para	1,230
A. W. Snow[3]	St. Georges	996

BALTIMORE

Boughton	Ceinfeugos	3,319
Ganotoise	Buenos Aires	4,000

NEWPORT NEWS

Vessel	Destination	Tons
Skogstad[1]	Barbadoes	5,500
Hammerhus[1]	Havana	6,100
C. Cuneo[1]	Santiago	1,100
Chaco[1]	Buenos Aires	4,000
Finn[1]	Havana	5,300

PHILADELPHIA

U. Holm	Havana	2,390
A. Cismpa	Genoa	
Farmand	La Romana	
Petra	Antilla	
Ponhook	Halifax, N.S.	
Bellatrix	Havana	
Il Piemonte	Genoa	
Gen. Hubbard	Havana	

[1] Berwind White. [2] Pocahontas Fuel Co. [3] Hasler Bros. [4] New River Coal Co. [5] Smokeless Fuel Co. [6] W. C. Atwater & Co.

OCEAN CHARTERS

The following charters have been reported from various sources during the past week:

VIRGINIA

Vessel	To	Tons	Rate
A. R. Heidritter	Bermuda	610	4.25
E. M. Wiley	Cay Francis	735	4.10
Josephine	Para	842	7.50
C. K. Schull	Para	827	7.50
C. G. Endicott	Para	761	
Republic	Rio Janeiro	680	10.00
D. H. Rivers	San Juan	963	4.00
M. L. Baxter	San Juan	826	

PHILADELPHIA

Vessel	To	Tons	Rate
Onaway	Tampa	886	2.25
Gen. Hubbard	Havana	2,390	
U. Holm	Havana	930	
E. F. Bartram	Buenos Aires	1,600	7.00
Il Piemonte	Naples		

BALTIMORE

Penobscot	Havana	1,660	

ATLANTIC RANGE

U. Mendi	Italy	2,664	22.80

OCEAN FREIGHTS

During the past week the freight market advanced to new high levels, and owners of steamers seem to be able to secure about any terms they ask. A steamer—the "Unbe Mendi," 5,000 tons, 10%, was chartered for coals, from Baltimore to Genoa, at $25.20 (not as reported), and $13.44 with 500 tons per day discharge is offered, from Virginia to Buenos Aires. It is reported that a steamer has been chartered at or about $5.25, from Virginia to Port of Spain, Trinidad, or St. Lucia. We were fortunate in having a number of steamers proposed to us for coal since our last report, which we have chartered, but none of these fixtures have been reported.

We would quote freight rates on coal by steamer as follows:

To	Rate	To	Rate
Havana	$3.00@3.25	Bermuda	$4.00@ 4.50
Cardenas or Sagua	4.00	Vera Cruz	5.50@ 6.00
Cienfuegos	3 75@4.00	Tampico	5.50@ 6.00
Port au Spain, Trinidad	5.00@5.50	Rio	13.00
St. Lucia	5.00@5 50	Santos*	13.50
St. Thomas	4.50@4.75	Montevideo	13.00
Barbados	5.00@5.50	Buenos Aires or La Plata†	13.00
Kingston	4.25@4.50	Rosario	14.00
Curacao	4.50	West Coast of Italy	25.20
Santiago	4.00@4.50	Barcelona**	24.00
Guantanamo	4.00@4 50	Valparaiso or Callao	15.00
Demerara	6.50@7.00	Marseilles	24.00

* Consignees paying dockage dues. ** Spanish dues for account. † Quotations on Plate coal by British steamers; neutral steamers are more difficult to obtain and the rates are always higher.

W. W. Battie & Co.'s Coal Trade Freight Report.

OHIO VALLEY

PITTSBURGH

Slump in prompt coal market due chiefly to blast furnace and steel works strike at Youngstown, but prices still relatively high.

The market for prompt coal grew slightly toward the close of last week and this week it has definitely turned soft, with a very limited demand and rather free offerings. The market is so upset that precise prices can scarcely be quoted, but in general the level seems to be fully 25c. under that of a week ago.

There appears to have been some let-up in the demand in various quarters, but the particular influence at the moment is the strike at the works of the Republic Iron and Steel Co. and the Youngstown Sheet and Tube Co. in the Youngstown district, throwing idle all departments of these great plants. The fuel coal released relieves the general situation, while in addition the Republic company's coal used in the byproduct coking plant at Youngstown is placed on the market.

There is no doubt there will be a full demand for coal up to Apr. 1, but a part of this demand is for stocking purposes, and fancy prices, $1.75 a ton or higher, are hardly paid for such coal. There are no quotations on contract coal, while the prompt market is quotable roughly as follows: 25c. lower than a week ago; slack and mine-run, $1.25@1.50; ¾-in., $1.35@1.60; 1¼-in., $1.50@1.75, per net ton at mines, Pittsburgh district.

BUFFALO

Stronger bituminous market, due to the new rate for No. 8 coal. Much trouble from embargoes. Prices still lower than at seaboard. Anthracite quiet.

Bituminous—The market is as unsettled as ever, on account of the many different sources of supply. So long as Ohio No. 8 coal can sell here at such low prices it is not much use trying to sell any other grade. The extreme low prices of a week ago are not common now, but the efforts to get this coal through to New England have not been very successful, on account of embargoes on almost all the roads in that direction. It is said that there is so much nonperishable freight standing on most of the roads that it is about impossible to do business over them. The Eastern market is hard pressed for coal.

There is no regularity to the Buffalo market. Consumers who can use Ohio coal are doing so; it has been offered here within a week as low as $1.20 per ton, mine price, plus the $1.25 freight rate, and consumers speak of it as a good steam coal, but too high in sulphur to be suitable for all purposes. If it succeeds in getting through eastward it will stiffen in price here and this market will have to pay Pittsburgh and Allegheny Valley prices. It is apparent that the Western markets are slack as compared with those from this city eastward. Buffalo is using its share of coal.

Quotations will remain about as last week, being in great part nominal:

	Pittsburgh	Allegheny Valley	Penn Smokeless
Lump	$3.50	$3.30	$3.35
Three-quarter	3.35	3.15	.....
Mine run	3.25	3.05	3.00
Slack	2.80	2.75	3.00

Prices are f.o.b. cars per short ton, except east of Rochester and Kingston, Ont.

Bituminous—The market is not strong, as is shown by the sales of independent coal at circular prices. Jobbers in the independent market are getting letters from the operators, complaining that they are doing only a small business, but while there is a premium paid on this coal to certain points eastward, none can be obtained here. The city trade is still dull, on account of uncertain weather; if there is not some cold weather soon, the entire winter sales will be light.

Reports of Western business are more favorable and it may develop that Lake shipments will be used up so completely that spring business can be resumed on a firm basis.

Anthracite quotations will therefore be on a quiet basis, as follows:

	Cars	Vessels	Retail	Custom
Grate	$5.60	$5.85	$5.40	$6.65
Egg	5.85	6.10	5.65	6.90
Stove	5.85	6.10	5.65	6.90
Chestnut	6.10	6.35	5.90	7.15
Pea	4.30	4.55	4.30	5.60
Buckwheat	3.25	3.50	3.25	4.50

Car and vessel deliveries are per long ton, the others, per short ton.

DETROIT

Less activity in steam and domestic trade and anthracite is dull. Lake shippers find vessels difficult to obtain.

Bituminous—Steam-coal buyers have developed a more halting attitude and orders are less frequent than before the holidays. Though the volume of business is still large, a perceptible reduction appears, in contrast to recent weeks. The less satisfactory situation is believed by shippers to be merely a resting period after the holidays and larger business is expected soon. Small sizes are the best sellers. Suspension of Lake navigation has materially cut down the supply, the mines turning out less of the small sizes since the outlet for the other coal is shut off.

Lack of interest in domestic grades is chiefly attributable to higher temperature. Incoming shipments comfortably offset the market requirements. Speculative consignments, though of considerable volume, seem not to exert a depressing effect. Cut-rate sales are few but are still made. Prices in general are steady, except on Pittsburgh No. 8, where lack of uniformity is ascribed to reduction of supply by a heavier movement to Buffalo.

Anthracite—Interest in anthracite is not active. Stove and egg sizes move slowly and even chestnut, which commanded a premium of 25c. a few days ago, may now be bought at list price. Shipments are somewhat irregular and the situation is complicated by freight congestion on Grand Trunk tracks, which results in delays in receiving carload consignments from the Michigan Central.

COLUMBUS

Cold weather has stimulated demand for domestic sizes. Steam business continues brisk and prospects for the future are bright.

The best feature of the coal trade in Ohio is the increased demand for domestic grades, due to lower temperatures. Retail trade is active everywhere and more strength is shown in every branch of the trade. Prices are firm at the levels which have prevailed for some time and advances have been recorded in the small sizes. There is a marked scarcity in nut, pea and slack and prices have advanced to approximately $1 per ton.

In retail circles trade is brisk, not only for the fancy grades such as Pocahontas and West Virginia splints, but also for Hocking and Pomeroy Bend products. Retail stocks are only fair and some dealers are placing orders for immediate shipment. Retail prices are firm and all changes are toward higher levels.

In steam circles prices are firm and premiums are being offered for spot stocks. One of the distinctive features is the scarcity of slack and contracts are being filled with other grades as much as possible. Contracts that expire at this time are being renewed at a higher figure than last year. The consumption of coal for steam purposes is increasing on every hand. Railroads are storing thousands of tons for emergencies and in view of a possible suspension after Apr. 1.

Considerable attention is being given to speculation on the coming wage scale. Operators believe that they should go slow in negotiating contracts because of the conditions in western Pennsylvania, where a reduction in rates may be secured.

Prices in Ohio fields, f.o.b. mines, per short tons, are as follows:

	Hocking	Pomeroy	Eastern Ohio	Kanawha
Re-screened lump	$1.60	$1.65	.....	.....
Inch and a quarter	1.50	1.50	$1.35	$1.50
Three-quarter-inch	1.35	1.40	.....	1.35
Nut	1.25	1.30	.....	1.25
Mine-run	1.15	1.20	1.05	1.10
Nut, pea and slack	1.00	1.05	.95	.95
Coarse slack	.90	.95	.85	.85

TOLEDO

Big Lake season expected. Railroads stocking large amounts of coal at Toledo. Prices strong.

Coal prices are being well maintained in Toledo and the demand for some grades is strong. Slack, for instance, is very strong and is bringing a dollar now, with prospects of a further increase; slack is difficult to obtain and contracts are not being well filled so that industrial plants are being forced onto the open market in an effort to secure sufficient fuel for their needs. The domestic trade has been a little slow, owing in part at least to the open winter. The railroads are stocking heavily.

A big Lake trade is looked for as soon as navigation opens and owners of vessels wintering in Toledo have requested local United States steamship inspectors to begin inspections early in order to be ready for the rush when it comes. The No. 8 operators are expecting to participate in the business the coming season. There will also be considerable coal sold in Canada this season.

CINCINNATI

Severe weather indicates a possible improvement in domestic grades. Steam coals strong, especially nut and slack. Car situation not much improved.

Although the coldest weather of the season appeared the latter part of last week, the domestic market remained relatively weak. Retailers have their yards jammed with coal, and there seems to be little prospect of any substantial reduction in their stocks during the remainder of the season. A slight improvement in the demand for spot coal is about all that has developed. On the other hand, the limited production of nut and slack has increased the scarcity of that grade, with correspondingly stiffer prices. Efforts of operators to push mine-run on the market, in the absence of a demand for the prepared grades, is noted.

LOUISVILLE

Lower temperatures stiffen up the market and sales are made at a substantial profit.

The market has stiffened due to colder weather, and purchasers who had previously been out of the market began to order by wire before office hours. Those companies which had been accumulating coal at distributing centers were in position to meet this demand and sold at a good price. Sales during the week have ranged around $1.75 and $1.85 for eastern Kentucky block, long-ton basis, f.o.b. mines; $1.35 and $1.45 for egg and round, and 90 and 95c. for nut and slack. All steam coals have been extremely active, but screenings continue in active demand and the trade is looking for the price to go to $1 almost any day.

COKE

CONNELLSVILLE

Prompt coke slumps, chiefly on account of strike banking some Youngstown blast furnaces. Partial embargo on shipments east.

The market for prompt coke, both furnace and foundry, was visibly easier early last week and at the close of the week a definite drop occurred in furnace coke, traceable apparently to the strike at Youngstown which has banked 10 furnaces. Of these, the banking of the five Republic stacks does not seriously affect the coke market. They were using byproduct coke made by the company at Youngstown, but a little coke on track was offered for sale before the strike closed the byproduct plant, the coal since having been sold. The Struthers stack, banked, was using its own coke made in the Connellsville region, and this is now offered in the market. The four stacks of the Youngstown Sheet and Tube Co. were takng Connellsville coke on contract, and the shippers now have the coke to spare.

The prompt furnace coke market was quotable at $3 until Saturday, when a sale was made at $2.50. This week there are offers at $2.50, but apparently no bids as high. A week ago a sale of about 8,000 tons of furnace coke for shipment over January was made at about $3.25. The position at the moment is that prompt coke is very easy, while January coke is higher than prompt, through fears of bad weather curtailing production and shipments, while for delivery later in the year the market is easier again.

The Baltimore & Ohio and Western Maryland route is embargoed for coke shipments east, but the coke can go over the Pennsylvania except to about half a dozen furnaces, which will doubtless bank unless the embargo is speedily lifted. The market stands quotable about as follows: Prompt furnace, $2.50; January furnace, $3; first half, $2.35@2.50; year, $2.25@2.35; prompt foundry, $3.75@4; contract foundry, $3@3.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Jan. 1 at 419,000 tons, an increase of 39,222 tons, and shipments at 343,573 tons, a decrease of 111,156 tons.

Buffalo—The coke market is fairly strong, but it appears that leading producers have asked too much of late and are now modifying quotations. City jobbers find the market too unsteady to warrant much handling of it, so that the trade is mainly in the hands of direct oven representatives. The consumption remains heavy. Quotations are on the basis of $5.80 for best 82-hr. Connellsville foundry and $4.85 for furnace, with no stock coking offering.

Chicago—Domestic sizes of coke are improved, owing to colder weather. Inquiries for furnace and foundry coke have increased, although some buyers show reluctance to pay the high prices asked. Gas-house prices are ranging about 25c. higher than last week. Prices per net ton, f.o.b. cars Chicago, are as follows: Byproduct, foundry, $5.50@5.75; byproduct, domestic, $4.95; Connellsville, $5.50@6; Wise County, $5.50; gas coke, $4.50@4.75.

St. Louis—A decided improvement in general domestic demand has brought the dealer strongly into the market, since coke, both byproduct and gas house, is rapidly displacing anthracite coal. Industrial demand continues firm. The following prices, per net ton, are in effect, f.o.b. cars, St. Louis: Byproduct (all sizes), $5; gas house (lump and egg), $4.25; petroleum (lump), $6.75.

MIDDLE WESTERN

GENERAL REVIEW

Domestic demand stimulated by colder weather. Steam coals still strong. Eastern coals show improvement and anthracite more active.

A cold snap has caused a noticeable increase in country buying of domestic sizes. Stocks are at the minimum, as is usual about the first of the new year, and this together with the colder weather caused many rush orders for coarse domestic sizes. The great strength of screenings continues a prominent feature of the market. Inquiries for fine coal are still more urgent than for the larger sizes; it is becoming increasingly difficult to obtain spot shipments of screenings except at a premium. This absorption of storage tonnage has not affected the prices of coarse steam sizes as yet, but if current ordering continues, prices will undoubtedly reach a much higher level shortly. Indications point to no suspension at Indiana and Illinois mines next spring, and this will undoubtedly cause buyers to delay ordering storage coal.

The market as a whole is satisfactory. Zero weather in the Northwest has strengthened the demand in that territory. Smokeless coals are gradually recovering their former strength, and anthracite orders reached considerable proportions the last few days.

INDIANAPOLIS

Indiana coal mines on about maximum capacity. Railroads and factories urgent buyers. Little coal on the open market. Prices firm.

Most Indiana mines are behind on their orders. The demand for domestic lump is only about normal, but the steam sizes are very active. Railroads and factories are in urgent need of mine-run. No congestion is reported at terminal or transfer points.

Except for screenings mine prices are much the same as they have been all the season, 85c. for Nos. 5 and 6, with No. 4 scarce and probably worth a dollar on the open market, though selling for 90c. on contract, f.o.b. mines; No. 4 mine-run $1.20, with a premium of five cents in the general market; Nos. 5 and 6, $1.10. Only a few of the companies are in a position to offer mine-run on the open market. Domestic lump, 4-in., sells for $1.65 f.o.b. mines. Retail prices continue unchanged.

CHICAGO

Higher prices in steam coal. Illinois and Indiana domestic demand much improved. Smokeless situation in Chicago changed for the better.

Franklin and Williamson County domestic sizes are in much better demand and tonnage produced is rapidly absorbed. Steam sizes show further strengthening and operators feel that the future holds additional advances. Storage coal is moving in goodly volume from Saline County mines, and more or less steam tonnage is being shipped from the Staunton group to Chicago.

Indiana domestic sizes have stiffened and screenings are averaging 10c. higher. The demand for coarse steam sizes is heavy, domestic coal is being steadily absorbed and 1¼-in. lump is strong. Large consumers and many railroads are storing increasing quantities of Indiana coal for emergencies.

The smokeless situation is now practically relieved of the complications which existed for several weeks, and mine-run sales are not below $1.25, with lump and egg quoted at $2 in flat bottoms and $1.85 in hopper cars. The accumulation has been entirely cleaned up. Pennsylvania smokeless shipments to this territory are of no consequence, due to the heavy demand in the East. What little coal is sold here is around $2 per ton. Considerable splint mine-run is being ordered for Western shipment, and 1¼-in. lump is going into storage, all of which makes splint prices strong.

Shipments of Hocking lump to this territory have increased at firm prices.

Kentucky mines are commencing to show the effects of overproduction, and domestic lump indicates a slight weakening tendency, ranging from $1.50 to $2.25; egg averages 25c. under these prices, but screenings are still exceptionally strong.

The colder weather has caused a spurt in anthracite sales, particularly chestnut.

Quotations in the Chicago market are as follows per net ton f.o.b. mines:

	Williamson and Franklin Co.	Springfield	Sullivan	Clinton	Knox and Greene Cos.
Lump	$1.60@1.75	$1.50@1.75	$1.60@1.70	$1.50@1.70	$1.50@1.60
Steam lump	....	1.25@1.35	1.20@1.30	1.30@1.40	1.30@1.35
2½ and 3-in. lump	....	....	1.40@1.50	....	1.30@1.40
1¼-in. lump	....	....	1.25@1.35	1.15@1.25	....
Egg	1.75	1.50@1.60	1.15@1.25	1.15@1.25	1.20@1.30
Nut	....	1.60@1.65	1.10@1.15	1.05@1.15	1.10@1.15
No. 1 washed	1.75	....	1.50	....	....
No. 2 washed	1.40@1.50	....	1.40	....	....
No. 1 nut	1.60@1.75	....	....	....	....
No. 2 nut	1.40@1.50	....	....	....	....
Mine-run	1.20@1.35	1.05@1.10	.95@1.10	1.00@1.10	1.10@1.15
Screenings	.90@1.00	.85@ .95	.90@ .95	.90@ .95	.90@ .95

	Harrisburg & Saline Co.	E. Kentucky	Pocah. & W.Va.Smok'l.	Penna. Smokeless	Hocking
Lump	$1.60@1.75	$1.70@2.40	$1.75@2.00	$1.75@2.00	$1.80@1.90
1¼-in. lump	1.30@1.35	....	....	....	1.50@1.60
Egg	1.60@1.75	1.50@2.00	1.70@2.00	1.75@2.00	....
Nut	....	1.35@1.65	1.50@1.75	1.40@1.60	....
No. 1 nut	1.60@1.75	....	....	....	....
No. 2 nut	1.40@1.50	....	....	....	....
Mine-run	1.20@1.25	1.15@1.25	1.25@1.40	1.25@1.40	1.25
Screenings	.90@ .95	.85@ .95	....	....	.90@1.25

Kanawha Splint Lump, $1.65@1.15.

ST. LOUIS

All sizes moving freely. Steam grades in good demand. Domestic improved. Storing increasing. Screenings firm.

All surplus coal has been moved and very little is accumulating at the mines. Franklin and Williamson County lump and nut, both washed and unwashed, are in strong demand, with prices tending upward. Egg is a trifle slow in spots, but there is none on tracks. Screenings and the small sizes of washed have been in excellent demand, prices holding firm at from 85 to 90c. per ton at the mines. Very little call has been made for mine-run.

Mt. Olive, Staunton, Montgomery, Intermediate and Standard have all shared about equally in better tonnage movement and increased mining operations. Some surplus lump was to be found, but not in any great quantity. Prices increased but slightly. All other sizes have moved very freely. Screenings, together with No. 5 washed slack, maintain a firm position, with 75c. per ton at mines as the prevailing price. Nos. 3 and 4 washed are scarcely obtainable. No. 2 nut washed and unwashed is in steady demand. Inquiries for storage and storage movement are increasing daily. Domestic trade has shown a decided improvement and will shortly take care of the excess lump.

Quotations per net ton, f.o.b. cars, at mines are:

	Williamson and Franklin	Staunton and Mt. Olive	Montgomery Co.	Intermediate	Standard
8-in. lump	.....	.....	.....	$1.25	$1.10@1.15
6-in. lump	$1.60@1.75	$1.25	$1.25@1.40	1.25	1.10@1.15
3-in. lump	1.40@1.65	1.15	.....	1.25	.....
2-in. lump	1.35@1.50	1.15	.....	1.20	.95@1.00
1¼-in. lump	1.30@1.50	.....	1.10@1.15	1.10	.95@1.00
6x3-in. egg	1.40@1.65	.....	1.25@1.40	1.25	1.05@1.15
6x2-in. egg	.....	.....	1.20@1.25	1.10	.95@1.00
6x1¼-in. egg	1.30@1.50	.....	1.10@1.15	.....	.....
No. 1 nut	1.25@1.35	.....	1.10@1.25	1.10	.95@1.00
No. 2 nut	1.25@1.35	.90@1.00	.....	1.00	.95@1.00
Mine run	1.10@1.15	1.00@1.05	1.05@1.10	1.05	.90@ .95
Screenings	.85@ .90	.75@ .80	.80	.75@ .80	.75@ .80
No. 1 washed nut	1.60@1.75	1.50@1.60	.....	1.50@1.60	1.50@1.60
No. 2 washed nut	1.35@1.50	1.35@1.50	.....	1.35@1.50	1.25@1.40
No. 3 washed nut	1.35@1.50	1.30@1.40	.....	1.30@1.40	1.25@1.40
No. 4 washed pea	1.35@1.50	1.25@1.40	.....	1.25@1.40	1.20@1.30
No. 5 washed slack	.85@ .90	.75@ .80	.....	.75@ .80	.75@ .80

DULUTH

Cold snap shakes down a bunch of orders. Great activity at all the docks.

Cold weather with a drop in the temperature to from 20 to 30 deg. below zero gave a tremendous impetus to the coal business during the past week and all the docks are working to full capacity. No general change in prices have been noted although a number of the companies have advanced quotations on some of the prepared sizes of smokeless. Quotations are as follows, per short ton, f.o.b. cars Duluth docks:

	Yough	Splint	Hock	Smokeless	Elkhorn
Lump	$3.40	$3.40	$3.40	$4.75	$3.75
Dock run	3.10	3.10	3.05	3.25	3.25
Egg, stove and nut	3.40	3.40	3.40	4.75	3.65
Screenings	2.40	2.40	2.25	2.75	2.55

The demand for anthracite continues brisk, all the country ealers and retailers being on hand with orders for some of the various sizes. The docks are apparently well stocked with all sizes and the movement is steady and brisk. Quotations are as follows per short ton, f.o.b. Duluth docks: Nut, $7.10; egg and stove, $6.85; pea, $5.55, and buckwheat, $4.

PRODUCTION AND TRANSPORTATION STATISTICS

ANTHRACITE SHIPMENTS

The shipments of anthracite for December as reported to the Anthracite Bureau of Information at Wilkes-Barre amounted to 5,939,844 long tons. This was a decrease as compared with the preceding month, November, of 357,371 tons, but an increase as compared with December, 1914, of 237,586 tons. The decrease as compared with the November, 1915, shipments was due entirely to the congested condition of traffic on the railroads, and to the consequent inability to secure cars for loading. Except for the car shortage the shipments for the month of December would probably have approached closely those of November (nearly 6,300,000 tons) and have made a record for the closing month of the year. As it was many collieries, particularly during the latter part of the month, were idle from two to three days a week.

TIDEWATER STOCKS

	Tons		Tons
Port Reading	36,150	Port Johnson	11,095
Port Richmond	153,366	South Amboy	278,058
Greenwich	7,354	Perth Amboy	45,211
Canton Piers	1,520		
Elizabethport	26,706	Total	559,460

Shipments for November and the first eleven months of 1914-15 were as follows:

	December		11 Months	
	1915	1914	1915	1914
Phila. & Reading	1,129,504	954,827	11,488,444	11,998,779
Lehigh Valley	1,028,421	1,055,349	12,932,526	13,136,759
Cent. R.R. of N.J.	722,982	710,604	8,017,816	8,924,936
Del. Lack. & West.	927,864	902,140	9,579,053	9,912,578
Del. & Hudson	650,999	641,952	8,016,988	7,313,541
Pennsylvania	637,445	530,200	6,124,596	6,434,937
Erie	652,505	703,037	7,874,062	8,268,585
Ont. & Western	190,124	204,149	2,088,577	2,352,486
	5,939,844	5,702,258	66,122,062	68,342,601

NORFOLK AND WESTERN

Destination of shipments over this road for November and the eleven months of this year and the last year were as follows, in short tons:

	November		Eleven Months	
Coal	1914	1915	1914	1915
Tidewater, foreign	109,095	215,625	1,795,486	3,426,479
Tidewater, coastwise	288,201	275,055	3,508,282	2,673,915
Domestic	1,455,562	2,245,446	18,527,036	18,597,536
Coke				
Tidewater, foreign	.....	7,082	339	27,591
Domestic	74,468	104,118	945,197	730,816
Total	1,927,326	2,847,326	24,776,340	28,303,663

BALTIMORE & OHIO

The following is a statement of coal and coke tonnage moved over this system and affiliated lines during November and the previous two months:

	September		October		November	
	1915	1914	1915	1914	1915	1914
Coal	3,034,271	2,878,963	3,124,328	2,662,377	2,869,287	2,324,271
Coke	331,224	237,661	368,257	208,866	375,014	185,466
Total	3,365,495	3,116,624	3,492,585	2,871,243	3,244,301	2,509,737

I. C. C. DECISIONS

Investigation and Suspension Docket No. 628—Coal to Kentucky Points.

Proposed cancellation of joint rates on coal from points in West Virginia to points in Kentucky not justified.

I. C. C. No. 6,852—Jewett, Bigelow & Brooks vs. Cincinnati, Hamilton & Dayton Ry., Co. Et. Al.

1. Demurrage charges on certain shipments of coal at Toledo, Ohio, found to have been assessed lawfully.

2. Defendant's tariffs not shown to have been unreasonable in not containing a provision permitting the waiver of demurrage charges accruing because of flood conditions. Complaint dismissed.

Investigation and Suspension Docket No. 595—Coal from Illinois mines.

Following 1915 Western Rate Advance Case, 35 I. C. C., 497, 603-611, proposed increased rates on bituminous coal from Illinois mines to west bank Mississippi River crossings and other points are found justified.

Coal Contracts Pending

The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.

Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

1660—East St. Louis, Ill.—We are advised that the announcement of the award on this contract (Vol. 8, pp. 911, 1090), which provides for furnishing the fuel requirements of the Obear-Nester Glass Co., was erroneous. The matter is still pending. Address Mgr. and Pur. Agt. Jos. Nester, Jr., the Obear-Nester Glass Co., East St. Louis, Ill.

+1727—Denver, Colo.—Bids have been received on this contract (Vol. 8, p. 999), which provides for furnishing the City Government with coal during the ensuing year, as follows: National Fuel Co., 2½-in. Puritan slack, $1.58; lump, $3.24; mine-run, $2.54. Rocky Mountain Fuel Co., Aztec or Piñon bituminous lump, $4.69. Colorado Fuel and Iron Co., Nos. 3 and 5 Ruby anthracite, $7.75. Address Comr. Clair J. Pitcher, Room 209, City Hall, Denver, Colo.

1785—Bridgeport, Penn.—This contract (p. 1088), should have been headed Pennsylvania instead of Connecticut, as in the previous item. Address Purchasing Agent A. H. March Packing Co., Bridgeport, Penn.

1797—New York City, N. Y.—The office of the purchasing agent of this company has been changed from 41 Park Row as previously noted. Address Pur. Agt. R. T. Spencer, Warren Mfg. Co., Woolworth Bldg., New York City.

1803—Westchester, Penn.—The name of the company as given in the previous notice on this contract should have been the Chester County Gas Co. instead of Westchester Gas Co. Address Pur. Agt. J. A. Pearson, Westchester, Penn.

1820—Somerset, Penn.—No award had been made on this contract (Vol. 8, p. 1089), up to Dec. 29. The bids were opened at 2 p.m., Dec. 28. Address Secy. C. E. Pile, Somerset, Penn. (No. 467, Vol. 7, pp. 628, 750.)

1824—St. Louis, Mo.—No award will be made on this contract (Vol. 8, p. 1089), until Apr. 1 at least. The company will continue getting its supply from the Lumaghi Coal Co., which concern has had the contract for a number of years. Address Secy. J. A. Castleton, St. Louis Smelting and Refining Co. International Life Bldg., St. Louis, Mo. (No. 427, Vol. 7, p. 568.)

1832—Wilmington, Del.—The Lobell Car Wheel Co. advises that its fuel requirements (Vol. 8, p. 1089), for the ensuing year are covered. Address Purchasing Agent, Lobell Car Wheel Co., Wilmington, Del.

1906—New York—The requirements on this contract (Vol. 9, p. 108), are given in the accompanying table:

Zone	Egg	Stove	Nut	Pea	Buckwheat No. 1	Buckwheat No. 3	Mine-Run
1	1,277	233	2	150	75	200	50
2	405	198	..	....	300	.....	.....
3	352	138	29	....	2,730	1,600	800
4	657	180	..	....	125	200	.....
5	490	160	2	....	2,535	200	250
6	400	87	..	....	850	.....	.....
7	465	145	..	....	75	800*	.....
8	290	118	..	....	15,700	.....	11,000
9	125	36	1	250	700	.....	.....
10	150	3	1	....	.....	.....	.....
11	50	50	..	....	.....	.....	.....
12	235	....	..	....	1,500	.....	100
13	150	....	..	....	1,725	.....	.....
14	200	1	..	....	.....	.....	.....
15	560	62	..	....	100	.....	.....
16	....	....	..	....	....	4,600	2,200
17	650	225	20	....	8,000	.....	.....
18	....	600	..	980	7,400	8,320	6,420
19	....	....	..	100	5,500	.....	5,500
Totals	6,456	2,236	55	1,480	47,315	15,120	26,320

* This is 800 tons of buckwheat No. 2. Bids were received for 25 tons of broken coal for Zone 1 and 50 tons for Zone 3.

For boundaries of the various zones, see Vol. 7, p. 915. Address Central Purchasing Committee, Room 1230, Municipal Bldg., New York, N. Y. (No. 706, Vol. 7, pp. 877, 915, 955, 1004, 1048 and 1083.)

+1835—Philadelphia, Penn.—This contract (Vol. 8, p. 1089, Vol. 9, pp. 36, 106), calling for about 125,000 tons each of anthracite and bituminous coal for the City Government, was bid on as follows:

ANTHRACITE	P. & R. C. & I. Co.	Newton C. Co.	Frank F. Mathers	Rogers-Corr C. Co.	Mason-Hedin Co.	Emmons C. M. Co.	J. C. Hancock & Co.
Pea							
Spring Garden P. S.	$3.98	$5.17	.....	.....	.....	.....	.....
Belmont P. Station	3.98	4.98	.....	$5.19	.....	$4.90	.....
Georges Hill	.....	4.63	$4.95	5.19	.....	5.45	$4.90
Belmont Filters	.....	4.63	4.95	5.19	.....	5.45	4.90
Queen Lane Filters	4.40	5.17	.....	5.19	.....	5.45	.....
Rox. Auxiliary	4.53	5.17	.....	7.50	.....	.....	.....
Rox. Upper Filters	4.53	5.50	.....	7.50	.....	.....	.....
Rox. Lower Filters	4.53	5.50	.....	7.50	.....	.....	.....
Mt. Airy	.....	5.50	.....	.....	.....	.....	.....
Wentz Farm	4.48	5.50	.....	7.50	.....	.....	.....
Mingo Creek	.....	6.59	5.30	.....	.....	.....	.....
Buckwheat							
Belmont P. Station	4.43	3.78	.....	4.50	.....	4.25	.....
Georges Hill	.....	3.47	3.65	4.50	.....	4.75	3.60
Belmont Filters	.....	3.47	3.65	4.50	.....	4.75	3.60
Queen Lane P. Station	3.19	4.15	.....	4.50	.....	4.45	.....
Queen Lane Filters	3.45	4.15	.....	4.50	.....	4.75	.....
Rox. Auxiliary	3.58	4.75	.....	5.50	.....	4.75	.....
Wentz Farm	3.53	4.75	.....	4.50	.....	.....	.....
Rice							
Belmont P. Station	2.28	3.68	.....	5.15	.....	4.05	.....
Queen Lane P. Station	2.44	4.68	.....	5.15	.....	4.25	.....
Barley							
Belmont P. Station	2.03	3.23	.....	5.15	.....	3.90	.....
Queen Lane P. Sta	2.19	3.23	.....	5.75	.....	4.10	.....
Egg							
Police and Fire Boats	.....	.....	.....	.....	.....	.....	.....
Port Richmond	5.45	5.89	.....	60.00	.....	.....	.....
House Cor., Pt. Rich	5.60	6.25	6.25	6.50	.....	8.70	.....
Buckwheat							
City Hall	.....	4.13	4.20	5.80	.....	.....	4.30
Municipal Hospital	.....	4.13	4.50	5.80	$4.67	.....	.....
Museums, 34 and Vintage	3.90	3.93	3.80	5.80	.....	.....	4.00
Charities, 34 and Pine	.....	4.03	4.20	5.80	.....	.....	.....
Home for Indigent:							
Boat	.....	4.73	4.50	5.00	.....	.....	.....
Rail	.....	4.63	4.50	5.80	.....	.....	.....
House Correction	3.85	4.37	4.25	6.50	.....	.....	.....
Rice							
City Hall	.....	3.83	4.05	5.00	.....	.....	4.10
Municipal Hospital	.....	3.83	4.25	5.00	3.82	4.65	.....
Museums, 34 and Vintage	.....	3.53	3.70	5.00	.....	.....	3.80
Charities, 34 and Pine	.....	3.63	4.05	5.00	.....	.....	.....
Home for Indigent:							
Boat	.....	4.17	4.50	5.00	.....	.....	.....
Rail	.....	4.07	4.50	5.00	.....	4.75	.....
House Correction	.....	3.83	4.25	5.80	.....	4.65	.....
Barley							
City Hall	.....	3.53	3.35	5.00	.....	.....	3.40
Municipal Hospital	.....	3.53	4.75	5.00	3.70	4.65	.....
Museums, 34 and Vintage	.....	3.33	3.15	5.00	.....	.....	3.20
Charities, 34 and Pine	.....	3.43	3.35	5.00	.....	.....	.....
Home for Indigent:							
Boat	.....	3.97	3.75	5.00	.....	.....	.....
Rail	.....	3.87	3.75	5.00	.....	4.65	.....
House Correction	.....	3.53	3.50	5.80	.....	4.65	.....

The Susquehanna Coal Co. bid $3.97 on pea coal for the Spring Gardens Pumping and $2.73 on buckwheat for the Belmont Pumping Station. Wm. Magee's Sons bid $4.79 on pea coal for Mingo Creek.

BITUMINOUS	Penna. C. & C. Co.	Emmens C. M. Co.	Rogers-Corr. C. M. Co.	Newton C. Co.	J. W. Mathers & Sons
Torresdale (30,000)	$3.30	$3.88	$5.50	$5.60	....
Shawmont P. S. (25,000)	3.25	3.93	5.50	5.60	....
Lardner's Pt. (55,000)	....	3.88	5.50	5.60	....
House Correction Gas Coal (7,000)	....	4.70	5.40	5.75	$6.00

The Greensburg C. & C. Co. bid $3.42 on 30,000 tons for the Torresdale Station, Swayne & Co. bid $4.54 on 25,000 tons for the Shawmut Station and J. W. Mathers & Sons bid $6 on the 7,000 tons for the House of Correction.

Address Dir. Herman Loeb, Dept. of Supplies, City Hall, Philadelphia, Penn. (No. 22, Vol. 6, p. 933; No. 1516, Vol. 8, pp. 577, 660; No. 1573, Vol. 8, pp. 699, 828; No. 1650, Vol. 8, p. 871.)

1914—New York, N. Y.—The requirements on this contract (Vol. 8, p. 108), are as follows:

Zone	Egg	Stove	Pea	—Buckwheat— No. 1	No. 3	Mine Run	
1	97	25	500	75	2,040	130	
2	115	185	850	150	....	....	
3	280	41	...	2,005	1,000	500	
4	30	125	...	175	850	....	
5	500	678	...	375	4,920	250	
6	...	47	...	175	....	....	
7	100	26	...	100	....	....	
8	...	76	...	650	....	....	
9	50	15	500	....	....	....	
10	...	9	...	....	....	....	
11	50	250	150	....	....	....	
13	50	...	...	25	....	....	
14	...	3	...	....	....	....	
15	45	2	...	125	....	....	
16	246	58	600	....	2,050		
17	...	...	...	4,100	....	....	
18	...	75	680	54,000	26,200	6,970	300 gas coal
Total.	1,563	1,615	3,280	61,955	37,060	7,850	300

Address Central Purchasing Committee, Room 1230, Municipal Bldg., New York, N. Y. (See Contract 1906, on p. 148.)

1920—Brooklyn, N. Y.—This contract (p. 108), which provides for furnishing the Bureau of Public Buildings with approximately 18,000,000 lb. of coal, has been bid on as follows, per thousand pounds: Thomas W. Ward's Sons, Inc., egg, $3.53½, stove, $3.53½, pea, $2.98; J. S. Schmadeke, egg, $3.50, stove, $3.50, pea, $2.75; Bacon Coal Co., egg, $3.34, stove, $3.34, pea, $2.68. Address Bureau of Public Buildings and Offices, Room 1003, 50 Court St., Brooklyn, N. Y. (No. 1617, Vol. 8, pp. 786, 870.)

New Business

Volume and page number in parenthesis at the end of an item indicate where the previous announcement, bids and awards on that contract may be found.

✚1922—Toledo, Ohio—The Toledo Water-Works is receiving bids for furnishing its annual fuel supply, involving approximately 8,000 tons of West Virginia nut, pea and slack coal. Deliveries must be made in self-dumping cars. Address Supt. P. R. Cook, the Toledo Water-Works, Toledo, Ohio. (No. 363, Vol. 7, pp. 566, 955; Vol. 8, pp. 200, 245.)

1923—Chicago, Ill.—The McAvoy Brewing Co. will purchase its requirements, amounting to about 18 tons per day, in the open market. Illinois screenings are required. Address Pur. Agt. Downey, McAvoy Brewing Co., 2349 South Park Ave., Chicago, Ill.

1924—East St. Louis, Ill.—The East St. Louis Light and Power Co. is requesting bids for furnishing its fuel requirements until Apr. 1 next. About 200 tons per day of either No. 5, washed slack or 1½-in. or 2-in. screenings of intermediate grade for the steam station at Alton, Ill., will be required. Delivery must be made via C. P. & St. L. Ry. Address Pur. Agt. S. P. Broome, 303 Collinsville Ave., East St. Louis, Ill

1925—Philadelphia, Penn.—Clifford R. Skinner is receiving quotations on 100,000 tons of West Virginia mine-run coal. Address C. R. Skinner, Drexel Bldg., Philadelphia, Penn.

1926—East St. Louis, Ill.—The Alton Gas and Electric Co. is requesting bids for furnishing its requirements, involving 200 to 250 tons per day of either No. 5 washed slack or 1½-in. or 2-in. screenings of intermediate grade for the Heating Station at Alton, Ill., until Apr. 1 next. Deliveries are made by Chicago & Alton Ry. Address Pur. Agt. S. P. Broome, 303 Collinsville Ave., East St. Louis, Ill.

1927—Chicago, Ill.—The Pyott Foundry Co. will confine its purchases, involving approximately one car per month of Illinois or Indiana lump coal, to the open market for the time being. About 50 tons of Pocahontas mine-run is also required. Address Pur. Agt. William Pyott, Pyott Foundry Co., 955 Carroll Ave., Chicago, Ill.

1928—Cincinnati, Ohio—The Laidlaw-Dunn-Gordon Co. is in the market for a prompt shipment of approximately 1,500 tons of mine-run coal. Address Pur. Agt. E. Christopher, the Laidlaw-Dunn-Gordon Co., Cincinnati, Ohio.

1929—Chicago, Ill.—The Chicago Consolidated Brewing and Malting Co. will be in the market soon for approximately 1,200 tons of Illinois screenings. Address Purchasing Agent, Chicago Consolidated Brewing and Malting Co., foot of 27th St., Chicago, Ill.

1930—St. Louis, Mo.—The St. Louis Well Machine Co. is buying its requirements, involving approximately 1,000 tons of 2-in. standard lump coal per annum, in the open market. Address Purchasing Agent, St. Louis Well Machine Co., St. Louis, Mo.

1931—Philadelphia, Penn.—The United Coal Co. is in the market for a prompt tonnage of nut and slack coal and also for approximately 6,200 tons of West Virginia mine-run to be delivered at Tidewater early in February. Address Mgr. of Eastern Sales, W. C. Huber, United Coal Co., Philadelphia, Penn. (No. 1898, Vol. 9, p. 107).

1932—Chicago, Ill.—The American Sand and Gravel Co. will purchase its requirements, involving about 25 cars of Illinois and Indiana screenings, in the open market. Address Pur. Agt. Fisher, American Sand and Gravel Co., Chicago, Ill. (No. 541, Vol. 7, p. 627.)

1933—Fairmont, W. Va.—The Moreland Coke Co. is in the market for a tonnage of West Virginia mine-run and nut and slack coal for delivery before Mar. 1. Address H. H. Magger, the Moreland Coke Co., Fairmont, W. Va.

1934—Philadelphia, Penn.—The Philadelphia Brewing Co. is in the market for its annual fuel supply, amounting to approximately 4,000 tons of buckwheat. Address Secretary, Philadelphia Brewing Co., Sixth and Clearfield St., Philadelphia, Penn.

1935—East St. Louis, Ill.—Armour & Co. will confine its purchases, involving approximately 120 tons of Nos. 2 or 3 unwashed nut or Nos. 3 or 4 washed coal per day, to the open market for the time being. It is also receiving quotations on 50 cars for storage purposes. Address Pur. Agt. A. G. Franklin, Armour & Co., East St. Louis, Ill.

1936—Chicago, Ill.—The Quadriga Manufacturing Co. will negotiate for its annual fuel supply, involving one car per month of Illinois or Indiana mine-run, about Feb. 1. Address Pur. Agt. Moser, Quadriga Manufacturing Co., Chicago, Ill.

✚1937—Columbus, Ohio—Bids will be received until noon, Jan. 24, for furnishing coal as may be required to the various city departments during the coming six months. Tonnages required are about as follows: Municipal Lighting Plant, 24,000 tons; Scioto River Pumping Station, 10,500 tons; Garbage Reduction Plant, 6,000 tons; Schiller Park, 100 tons; Water-Works shop, 150 tons; State St. yard, 50 tons; Goodale Park, 40 tons. Bidders must submit a bond for 50 per cent. of the amount of their bids. Address Dir. B. L. Bargar, Purchasing Board, Columbus, Ohio. (No. 65, Vol. 7, pp. 231, 358.)

1938—St. Louis, Mo.—The Progress Pressed Brick Co. is purchasing its supply, amounting to 4 or 5 cars per week of Nos. 1 or 2 washed nut or 6x2-in. egg coal, in the open market. Address Pur. Agt. A. Stocke, the Progress Pressed Brick Co., St. Louis, Mo.

1939—Granite City, Ill.—The Western Fire Brick Co. is in the market for 1 or 2 cars of No. 1 washed nut or 6x2-in. egg coal per week. Address Gen. Mgr. and Pur. Agt. Geo. Hanlon, Western Fire Brick Co., Granite City, Ill. (Vol. 8, p. 960)

1940—Philadelphia, Penn.—The Methodist Episcopal Hospital is in the market for its annual fuel supply, involving approximately 2,500 tons of anthracite pea coal. Address Mgr. Charles Kirkland, Methodist Episcopal Hospital, Broad and Wolf St., Philadelphia, Penn.

1941—Chicago, Ill.—Franklin MacVeagh & Co. will soon contract for its annual fuel supply, involving approximately 2,400 tons of Illinois and Indiana screenings. Address Purchasing Agent, Franklin MacVeagh & Co., 333 West Lake St., Chicago, Ill.

✚1942—Cincinnati, Ohio—The Public Service Department will receive bids until noon, Jan. 19, for furnishing and delivering about 1,500 tons of coal for use at the Western Hills Pumping Station and about 500 tons for use at the Filtration Plant. A satisfactory bond for $500 must be given on each of these contracts, deliveries on both of which are to be concluded June 30 of the current year. Address Director, Public Service, City Hall, Cincinnati, Ohio. (No. 1200, Vol. 8, pp. 244, 410.)

1943—St. Louis, Mo.—The fuel supply for the United Railways Co. and the Union Electric Light and Power Co. will be bought by their agent, the Devoy & Kuhn Coal Co., in the open market. About 50 to 60 cars of 1½-in. to 2-in. screenings are required by both concerns. Address Devoy & Kuhn Coal Co., St. Louis, Mo.

1944—Philadelphia, Penn.—John Wilde & Bro. is in the market for its annual fuel supply, involving approximately 1,000 tons of anthracite buckwheat per annum. Address Purchasing Agent, John Wilde & Bro., Wissahickon, Philadelphia, Penn.

1945—Madison, Ill.—The Laclede Steel Co. will confine its purchases, involving about 75 tons of 1½-in. or 2-in. screenings per day, to the open market. Address Pur. Agt. H. J. Stenbreder, the Laclede Steel Co., Madison, Ill.

✚1946—Columbus, Ohio—Bids will be received until Jan. 24 for furnishing and delivering approximately 2,500 tons of the best quality lump coal for use at the city prison, workhouse

and various engine houses. All bids must be accompanied by a bond for $688. Address Dir. Pub. Ser. B. L. Bargar, City Hall, Columbus, Ohio. (No. 1125, Vol. 8, pp. 158, 283, 490.)

1947—New York, N. Y.—The National Biscuit Co. is receiving bids for furnishing approximately 1,000 tons each of egg and Nos. 1 and 2 buckwheat. The company has already contracted for its requirements and this extra tonnage is apparently for storage purposes. Address Purchasing Agent, the National Biscuit Co., New York, N. Y.

1948—Jackson, Mich.—The Consumers Power Co. is in the market for approximately 5,000 tons of West Virginia nut and slack coal, deliveries to be completed by Apr. 1. A portion of the tonnage must be adaptable for Jones underfeed, Murphy and chain-grate stokers. Address Mechanical Engr. H. F. Eddy, the Consumers Power Co., Jackson, Mich.

1949—St. Louis, Mo.—The Polar Wave Ice and Fuel Co. receives quotations daily for furnishing the requirements of its several plants, which amount to between 200 and 250 tons of 1½-in. or 2-in. screenings per day. Address Pur. Agt. John Stueber, the Polar Wave Ice and Fuel Co., St. Louis, Mo.

1950—Columbus, Ohio—The W. J. Hamilton Coal and Coke Co. is in the market for approximately 1,000 tons of nut and slack coal for immediate delivery. Address The W. J. Hamilton Coal and Coke Co., Columbus, Ohio.

1951—Philadelphia, Penn.—The Women's Homeopathic Hospital is in the market for its annual supply of Lykens Valley buckwheat, which amounts to approximately 1,000 tons per year. Address Women's Homeopathic Hospital, 20th St. and Susquehanna Ave., Philadelphia, Penn.

1952—East St. Louis, Ill.—The Commercial Acid Co. is receiving quotations for furnishing its immediate requirements of 1½-in. or 2-in. screenings and No. 2 unwashed nut coal. About 25 cars of No. 2 unwashed nut for storage purposes is also required. Address Mgr. and Pur. Agt. Homer Hodson, the Commercial Acid Co., East St. Louis, Ill.

1953—East Chicago, Ill.—The U. S. Reduction Co. is buying its requirements, amounting to 1 or 2 cars of Indiana mine-run coal per month, in the open market. Address Purchasing Agent, U. S. Reduction Co., East Chicago, Ill.

1954—Cleveland, Ohio—Sealed bids will be received until Jan. 21 for furnishing coal for the Garbage Reduction Works during the ensuing year. About 250 tons of mine-run coal per week will be required and deliveries are made by Baltimore & Ohio Ry. to Willow, Ohio. A bond for $300 must accompany all bids. Address Commissioner of Purchases and Supply, City Hall, Cleveland, Ohio. (No. 50, Vol. 7, p. 149.)

1955—Chicago, Ill.—Crerar, Clinch & Co. will soon be in the market for a large tonnage of gas coal for illuminating purposes. It is already receiving statements of analysis, together with records of coal, freight rates, etc. Address John Crerar, Crerar, Clinch & Co., Chicago, Ill.

1956—Philadelphia, Penn.—The American Coalette Co. is in the market for about 1 car a week of No. 3 buckwheat coal or good, clean culm suitable for briquetting. Address Leslie Rogers, the American Coalette Co., 22nd and Westmoreland St., Philadelphia, Penn.

1957—St. Louis, Mo.—The Madison County Light and Power Co. is in the market for about 150 tons of standard 1½-in. screenings, this being only a portion of the company's requirements. Address Pur. Agt. Jeffries, the Kerens-Donnewald Coal Co., St. Louis, Mo.

1958—Chicago, Ill.—D. E. McMillan & Bro. are in the market for an immediate shipment of 5,000 tons of West Virginia egg or three-quarter lump coal. Address Pur. Agt. J. P. McMillan, D. E. McMillan & Bro., Chicago, Ill.

1959—St. Louis, Mo.—The P. B. Mathiason Co. is purchasing its fuel requirements, involving 400 to 500 tons of either 2-in. lump or 6x2-in. egg coal per month, in the open market. Address Purchasing Agent, the P. B. Mathiason Co., St. Louis, Mo.

1960—Chicago, Ill.—Reid, Murdock & Co. will soon be in the market for its annual fuel requirements, involving approximately 12,000 tons of Illinois or Indiana screenings. Address Pur. Agt. Harry Wilson, Reid, Murdock & Co., Clark St. Bridge, Chicago, Ill.

1961—Philadelphia, Penn.—Philip Spaetar & Sons, coopers, are in the market for its annual fuel supply, involving about 500 tons of buckwheat coal. Address Purchasing Agent, Philip Spaetar & Sons, 23rd St. and Passyunk Ave., Philadelphia, Penn.

1962—St. Louis, Mo.—The Mayer Fertilizer and Junk Co. will purchase its fuel requirements, involving about 200 tons of either No. 2 nut or 2-in. lump, in the open market. Address Purchasing Agent, the Mayer Fertilizer and Junk Co., St. Louis, Mo.

1963—Chicago, Ill.—The Aetna Sand and Gravel Co. is in the market for its annual fuel supply, involving approximately 2,500 tons of Spring Valley, Illinois, coal. Address Pur. Agt. S. Sigler, Aetna Sand and Gravel Co., 7159 Normal Ave., Chicago, Ill.

1964—St. Louis, Mo.—The St. Louis Frog and Switch Co. will confine its purchases, involving about 2 cars of 2-in. lump coal per month, to the open market. Address Pur. Agt. Einstein, St. Louis Frog and Switch Co., St. Louis, Mo.

1965—Philadelphia, Penn.—The Liebert & Obert Brewing Co. is in the market for its annual fuel supply, involving about 1,500 tons of anthracite buckwheat coal. Address Purchasing Agent, Liebert & Obert Brewing Co., Manayunk, Philadelphia, Penn.

1966—St. Louis, Mo.—The Parker Russell Mining and Manufacturing Co. will confine its purchases, involving from 3 to 5 cars of 1-in. Standard lump per week, to the open market. Address Pres. and Pur. Agt. Parker, the Parker Russell Mining and Manufacturing Co., St. Louis, Mo.

1967—Chicago, Ill.—The Albaugh-Dover Co. will confine its purchases, involving from 2 to 3 cars of Indiana mine-run per month, to the open market. Address Pur. Agt. Weldon, Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.

1968—St. Louis, Mo.—The Mound City Roofing Tile Co. will purchase its requirements, involving about 1 car of 2-in. Standard lump coal per week, to the open market. Address Mgr. and Pur. Agt. Gallant, Mound City Roofing Tile Co., St. Louis, Mo.

1969—Philadelphia, Penn.—The Delaware Freezing and Storage Co. is in the market for its annual fuel requirements, involving about 3,000 tons of white ash buckwheat coal. Address Purchasing Agent, Delaware Freezing and Storage Co., American and Callowhill St., Philadelphia, Penn.

1970—St. Louis, Mo.—The Mechanics Planing Mill Co. will confine its purchases, amounting to about 50 tons of 1½-in. Standard screenings per month, to the open market. Address Purchasing Agent, the Mechanics Planing Mill Co., St. Louis, Mo.

1971—St. Louis, Mo.—A. Leschen & Sons Rope Co. will confine its purchases, involving about 3 cars of either 2-in. or 3-in. lump or 6x2-in. egg coal, to the open market. Address Pur. Agt. Neestrath, A. Leschen & Sons Rope Co., St. Louis, Mo.

1972—Philadelphia, Penn.—The Home for Consumptives is in the market for its annual fuel requirements, involving about 1,000 tons of buckwheat. Address Purchasing Agent, Home for Consumptives, Chestnut Hill, Philadelphia, Penn.

1973—St. Louis, Mo.—The St. Louis Cut Stone Co. will confine its purchases, involving about 2 cars of 2-in. screened lump coal per month, to the open market. Address Pur. Agt. Edw. Stamm, the St. Louis Cut Stone Co., St. Louis, Mo.

1974—Ft. Worth, Tex.—The Natorium Steam Laundry purchases about 3 carloads of slack per month. Deliveries are made by wagon and the company has storage capacity for 80 tons. Address Pur. Agt. N. E. Gambrell, 101 East Belknap St., Ft. Worth, Tex.

1975—Philadelphia, Penn.—The Ripka Mills Co. is in the market for its annual fuel supply, involving approximately 1,000 tons of buckwheat coal. Address Pur. Agt. F. S. Drake, Commercial Trust Bldg., Philadelphia, Penn.

1976—St. Louis, Mo.—The Trinidad Asphalt Co. will confine its purchases, involving about 1 car of 2-in. screened lump coal per week, to the open market. Address Pur. Agt. Terpenny, the Trinidad Asphalt Co., International Life Bldg., St. Louis, Mo.

1977—Philadelphia, Penn.—The Philadelphia Brick Co. is in the market for its annual supply of broken coal. Address Purchasing Agent, Philadelphia Brick Co., 23rd St. and Passyunk Ave., Philadelphia, Penn.

1978—St. Louis, Mo.—The Peroxide Specialty Co. will confine its purchases, involving about 500 tons of 2-in. or 6-in. lump coal per annum, to the open market. Address Purchasing Agent, the Peroxide Specialty Co., St. Louis, Mo.

1979—Ft. Worth, Tex.—M. T. Massey & Co. require about 20 cars of nut and lump coal per annum, which it buys at $5.50 for lump and $4 per ton for nut, this including cost of delivery by wagon. The company has a storage capacity for 160 tons. Address M. T. Massey, 2202 North Main St., Ft. Worth, Tex.

1980—Tamaqua, Penn.—The local School District will receive bids until 8 p.m., Jan. 20, for furnishing and delivering to the several school buildings 100 tons each of pea and stove coal. Address Secy. Joseph H. Shepp, School District of Tamaqua, Tamaqua, Penn.

1981—St. Louis, Mo.—The Valier & Spies Milling Co. will purchase the requirements for its Marcus Ave. plant, involving about 500 tons of either southern Illinois 1½-in. screenings or No. 5 washed slack coal, in the open market, as required. Address Purchasing Agent, the Valier & Spies Milling Co., Pierce Bldg., St. Louis, Mo.

1982—Carey, Ohio—The National Lime and Stone Co., taking Hocking Valley delivery, is in the market for 5,000 tons of mine-run and 2,000 tons of ¾-in. coal, for delivery in about equal monthly proportions during the ensuing year. Quotations are requested on both West Virginia and Ohio coals. Address Gen. Mgr. R. T. Spencer, National Lime and Stone Co., Carey, Ohio.

Contracts Awarded

Note—Successful bidders are noted in **bold face** type.

1661—Norristown, Penn.—This contract (Vol. 8, p. 911), which provides for furnishing the Adam Scheidt Brewing Co. with its annual requirements of rice coal, has been awarded to the **Philadelphia & Reading Coal and Iron Co.** Address Purchasing Agent, Adam Scheidt Brewing Co., Norristown, Penn.

1666—West Chester, Penn.—This contract (Vol. 8, p. 912), which provides for furnishing the Sharples Separator Co. with its annual fuel requirements involving approximately 2,500 tons of buckwheat and rice coal has been awarded to the **Philadelphia & Reading Coal and Iron Co.** until Mar. 31. Address Purchasing Agent, Sharples Separator Co., West Chester, Penn.

+1677—Chicago, Ill.—This contract (Vol. 8, pp. 1043, 1087, 912, Vol. 9, p. 106), has been awarded to the parties noted as the lowest bidders (p. 106). Address City Engineer, John Erickson, Bureau of Engr., Dept. of Public Works, Chicago, Ill. (No. 312, Vol. 7, pp. 488, 666, 748, 915.)

1680—Philadelphia, Penn.—This contract (Vol. 8, p. 912), which provides for furnishing the George P. Pilling & Son with white ash buckwheat coal, has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the period to Apr. 1. Address Purchasing Agent, George P. Pilling & Son, 23d and Arch St., Philadelphia, Penn.

1695—Peoria, Ill.—This contract (Vol. 8, p. 957), which provides for furnishing the Elsberry Drainage District with approximately 1,200 tons of 1½-in. screened lump coal has been awarded to the **West Virginia Coal Co.,** of St. Louis, Mo. Address Harman Engineering Co., Peoria, Ill.

1701—Camden, N. J.—This contract (Vol. 8, p. 958), which provides for furnishing the New York Ship Building Co., with its fuel supply, has been awarded to the **Philadelphia & Reading Coal and Iron Co.** until Apr. 1. Broken coal is required and the company consumes about 100 tons per month. Address Pur. Agt. Leon G. Buckwalter, New York Ship Building Co., Camden, N. J.

1704—Norristown, Penn.—This contract (Vol. 8, p. 958), which provides for furnishing the Counties Gas and Electric Co. with coal has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the first three months of the current year. Broken coal is used and the company requires between 5,000 and 6,000 tons per annum. Address Pur. Agt. J. A. Pearson, Broad and Arch St., Philadelphia, Penn.

1716—Reading, Penn.—This contract (Vol. 8, p. 998), which provides for furnishing the Reading Hardware Co. with its fuel requirements, has been awarded to the **Philadelphia & Reading Coal and Iron Co.** until Apr. 1. The company consumes about 5,000 tons per annum. Address Pur. Agt. Isaac Treat, Reading Hardware Co., Reading, Penn.

1717—Reading, Penn.—This contract (Vol. 8, p. 998), which provides for furnishing the Penn Hardware Co. with its fuel requirements has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the period ending Apr. 1 of the current year. The company consumes about 3,000 tons of anthracite per annum. Address Purchasing Agent Penn Hardware Co., Philadelphia, Penn.

1737—Philadelphia, Penn.—This contract (Vol. 8, p. 999), which provides for furnishing the requirements of the Penn Salt Manufacturing Co. has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the first three months of this year. The company usually requires about 45,000 tons of anthracite rice coal per annum. Address Purchasing Agent, Pennsylvania Salt Manufacturing Co., Widener Bldg., Philadelphia, Penn.

1741—Philadelphia, Penn.—This contract (Vol. 8, p. 999), which provides for furnishing the requirements of N. Snellenburg & Co. has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the first three months of the current year. The company consumes about 10,000 tons of anthracite buckwheat coal per annum. Address Purchasing Agent, N. Snellenburg & Co., 12th and Market St., Philadelphia, Penn.

Contract Notes

St. Louis, Mo.—The Carondelet Milling Co. has electrified its power plant, and will no longer require coal.

Kansas City, Mo.—The Southwest Warehouse Co. has contracted with the **Leonard Coal Co.** for about 12 cars of coal a month.

Kansas City, Mo.—Increased price of fuel oil has forced the City Light and Storage Co. to resume coal gas, and they require about 30 tons a day.

Ensley, Ala.—The Bessemer Fire Brick Co. has bought its coal requirements at the prices previously listed (Vol. 8, pp. 960, 1045). The purchase was not made on a contract. Address Pur. Agt. J. W. Minor, Bessemer Fire Brick Co., Ensley, Ala.

Fort Worth, Tex.—J. W. Mitchell, building agent, has awarded contract for furnishing his fuel supply to the **S. F. Bibbs Coal and Grain Co.,** the **Heffley Coal Co.** and the **Alford Ice and Fuel Co.** at $4.50 per ton, delivered. Address J. W. Mitchell, 701 First National Bank Bldg., Fort Worth, Tex.

Delphos, Ohio—The award on the contract of the Delphos Electric Co. (Vol. 8, p. 1045), involving 1,500 tons West Virginia mine-run coal, should have been noted at 85c., instead of 65c. Address Supt. C. K. Beilharz, Delphos Electric Co., Delphos, Ohio.

St. Louis, Mo.—The Field-Lippman Piano Stores Co. has awarded the contract for furnishing its fuel requirements to the **Devoy & Kuhn Coal Co.** Address Secy. and Treas. W. A. Lippman, the Field-Lippman Piano Stores Co., 1120 Olive St., St. Louis, Mo.

Auburn, Me.—The contract for furnishing the Geo. M. Roak Co., florists, with a year's supply of Georges Creek coal, has been awarded to **W. E. Cloutier & Co.,** of Lewiston. About 150 tons are required. Address Mgr. Emma D. Roak, Geo. M. Roak Co., Auburn, Me.

Terre Haute, Ind.—The Terre Haute Vitrified Brick Co. consume approximately 40,000 tons of mine-run coal per annum, deliveries being made at the rate of approximately 3,500 tons per month. Address Pur. Agt. J. M. Hoskins, 116 South 6th St., Terre Haute, Ind.

Delphos, Ohio—The Delphos Water-Works Commission is understood to have closed a contract some time in November, covering its requirements involving approximately 1,500 tons of West Virginia mine-run at 85c. per ton. Address Clk. Otto J. Laudick, Delphos Water-Works, Delphos, Ohio.

Dewey, Okla.—The Dewey Portland Cement Co. consumes about 73,000 tons of slack, and 1,000 tons of nut coal per annum. Deliveries are made by railroad at the rate of 200 tons per day, and the company may contract at any time. Address Pur. Agt. H. F. Tyler, The Dewey Portland Cement Co., Dewey, Okla.

Fort Worth, Tex.—The Acme Lumber Co. has awarded contract for furnishing 240 tons of Wilburton slack coal to the **Cobden Fuel Co.** at $1.10 per ton at the mine. Delivery is made by wagon. The company requires about 40 tons per week. Address Pres. and Treas. Chas. A. Wheeler, 808 Monroe St., Fort Worth, Tex.

Bradford, Penn.—The Bradford Pressed Brick Co. at this place consume approximately 5,200 tons of mine-run coal per annum, deliveries being made by railroad at the rate of about 25 tons per week. The company has storage capacity for 100 tons. Address Pur. Agt. Edwin T. Conley, Bradford Pressed Brick Co., Bradford, Penn.

Louisville, Ky.—The Louisville Water Co. consumes about 7,500 tons of Eastern Kentucky pea and slack and 7,000 tons of Western Kentucky No. 9 pea and slack coal per annum. Deliveries were made by railroad at the rate of about seven cars per week. The company has two stations with storage capacity of 1,000 tons at each. Address Pur. Agt. C. S. Potter, Louisville Water Co., Louisville, Ky.

Demopolis, Ala.—The Demopolis Cotton Mill at this place consumes approximately 1,200 tons of mine-run coal per annum. Deliveries are made by railroad at the rate of two cars per month, and the company has storage capacity for approximately 150 tons. Address Pur. Agt. H. M. Atkinson, Demopolis Cotton Mills, Demopolis, Ala.

Louisville, Ky.—The Louisville Cement Co. consumes about 50,000 tons of nut coal during the 35 to 40 weeks' running time they ordinarily have each year. Deliveries are made by railroad at the rate of 1,200 to 1,500 tons per week, and the company has practically unlimited storage capacity. The coal is obtained from allied companies. Address Pur Agt. E. J. Heimerdinger, Louisville Cement Co., 325 W. Main St., Louisville, Ky.

Financial Department

Colorado Fuel and Iron Co.

The twenty-third annual report of this company for the year ending June 30, 1915, states, in substance:

Results—Gross earnings were $16,578,040, a reduction of $1,224,985, all but about $25,000 of which occurred in the iron department. Operating expenses decreased $1,916,274 and net earnings from operations were $1,765,058, an increase of $691,288. The income from sources other than operation was $496,043, making the total net income $2,261,101. Bond interest, taxes, sinking funds and other charges against income amounted to $2,595,762, resulting in a deficit of $334,661 as against a deficit of $905,968 in the previous year. The reduction in sales was due to a curtailment in the consumption of coal in all of the territory supplied from Colorado, and to lighter purchases of steel by railroads.

Outlook—There is little promise of improvement in buying by railroads during the current fiscal year, and we do not anticipate a volume of rail business that will keep the rail mill operating to more than 50% of its capacity. The summer demand for coal has not been up to normal, and while some improvement is anticipated in the near future, it is not believed that the business will be such as to enable us to work all of our mines to their capacity, even during the winter months.

During the period of reduced consumption of coal, extending now over two years, development of new coal properties in Colorado has continued, with the result that the productive capacity of developed mines producing domestic coal in the state is at least twice the present demand and far in excess of the prospective demand for some years. Our coal properties have been kept in good physical condition and are able to respond to whatever demand may develop, though with the increase in the number of mines operated by others, our participation in the business offered will naturally be on a reduced basis.

Relation with Employees—A plan of coöperation with our employees, providing for the adjustment of differences and the consideration of other matters of common interest, through representatives selected by the workmen, has been inaugurated at the coal mines. In its formative state this plan has proven to be mutually beneficial, and its further development is anticipated in the near future.

STATEMENT OF PRODUCTION FOR YEARS ENDING JUNE 30

Short Tons	1914-15	1913-14	1912-13	1911-12
Coal	2,329,060	2,428,992	4,091,667	4,038,852
Coke	520,261	535,274	784,627	777,993
Iron ore	441,026	614,039	853,878	813,728
Limestone	344,033	376,226	485,756	459,913
Pig iron produced	268,661	268,883	416,467	426,659
Finished iron and steel	324,600	352,929	458,521	485,743

RESULTS FOR YEAR ENDING JUNE 30

	1914-15	1913-14	1912-13	1911-12
Iron department	$10,885,451	$12,085,037	$15,590,535	*$15,140,523
Fuel department	5,632,589	5,717,988	8,725,353	*9,127,929
Total gross earnings	$16,578,040	$17,803,025	$24,315,888	$24,268,452
Iron department	$1,869,317	$1,569,288	$2,894,464	$2,766,775
Industrial dept. (fuel)	loss 104,259	loss 495,518	725,802	*1,005,507
Total net earnings	$1,765,058	$1,073,770	$3,620,266	$3,772,282
Add—Inc. from secur.	370,508	391,229	563,439	526,270
Interest and exchange	125,535	186,248	192,190	150,423
Total net income	$2,261,101	$1,651,247	$4,375,895	$4,448,975
Deduct				
Bond interest	$2,016,213	$2,021,103	$2,026,780	$2,039,622
Taxes	302,909	293,580	243,722	226,737
Real estate sinking funds	83,658	90,221	142,531	138,317
Insurance, sociological, personal injury, etc.	74,494	55,128	50,082	64,105
Equipment renewal	80,000	43,016	120,000	120,000
Loss on Crystal R. RR.	36,000	36,000	36,000	36,000
Prospecting	2,488	18,186	29,588	22,965
Preferred dividends	.....	.....	a (4) 80,000	(5) 100,000
Total deductions	$2,595,762	$2,557,216	$2,728,703	$2,747,746
Balance, sur. or def.	def. $334,661	def. $905,969	sr $1,647,192	sr $1,701,229

a The dividend above deducted in 1912-13 is the 4% ($80,000) paid July 1 1913; there was also declared at the same time a dividend of 4%, which was paid Jan. 1, 1914, and deducted from profit and loss. An extra payment of 35% ($700,000) was also made Mar. 20, 1913, on account of the 74% then accumulated dividends, leaving about 39% still due.

* Figures so marked are inaccurate, comparison being changed in later years, the general results for the year, however, remaining unchanged.

Note—For previous annual report of this company see Vol. 7, p. 150.

Lehigh & Wilkes-Barre

(Report for Fiscal Year Ending June 30, 1915.)

President and General Manager Charles F. Huber, reports under date of Sept. 23, as follows:

Results—The company mined and shipped during the year 4,942,886 tons, a decrease of 279,457 tons, and 54,796 tons were purchased, a decrease of 43,262 tons, as compared with the previous year. The tonnage sold was 4,738,745, a decrease of 468,302 tons as compared with the previous year. The tonnage of prepared sizes sold, including lump, equaled 66.88%, and of pea and smaller 33.12%.

The general condition of trade, together with an exceedingly mild winter, account for the decrease in production and sales. Operating costs were higher, due to decreased output and to mining the thinner seams in the interest of conservation of the available tonnage. The coal mined in excess of sales and put into stock has reduced income to a considerable extent. The result has been a decrease in net earnings.

Bonds—On June 1, 1915, the first series of bonds matured under the consolidated mortgage of June 1, 1910. The necessary funds have been deposited with the Pennsylvania Company, trustee, and as soon as all of the bonds of this maturity have been presented the $2,500,000 will be canceled.

Additions—The new breaker at Wanamie Colliery is well under way and will be completed early next year. Active construction on the new general shops and supply store at Empire will be started in September.

Tax Suit—The Tonnage Tax Law having been upheld by the decision of the Courts of Dauphin County, appeal has been taken to the Supreme Court. Hearing was held in July and no payment will be made until the validity has been finally passed upon by the Court.

TONNAGE, EARNINGS, EXPENSES, ETC.

Tonnage shipped	1914-15	1913-14	1912-13	1911-12
By company	4,942,886	5,222,343	5,188,221	3,985,424
By tenants	673,412	778,617	1,055,101	1,113,126
Total of all	5,616,299	6,000,961	6,243,321	5,098,552
Produced as Follows				
From fee lands	3,889,865	4,355,497	4,571,391	3,681,005
From leased lands	1,438,481	1,403,940	1,464,892	1,248,111
From washeries	288,052	241,523	207,036	169,436
Earnings				
Coal sales	$16,271,085	$17,930,990	$20,085,620	$18,271,001
Coal mined by tenants	116,372	240,948	316,850	306,928
Miscellaneous	368,014	272,875	226,094	164,695
Total	$16,755,471	$18,444,813	$20,628,564	$18,742,624
Expenses				
Operating collieries, etc	8,285,286	8,260,921	7,881,079	6,450,714
Addns., etc., deprecn	247,144	317,125	337,137	261,181
Royalty leased prop'ties	432,598	401,822	395,257	341,089
Coal purchased	79,837	142,060	1,246,470	1,691,392
Transp., yard and ag'y exp.	3,726,939	3,828,542	4,451,284	3,885,289
General expenses	102,636	131,384	126,701	119,219
Taxes, mining property	753,548	1,067,423	727,079	719,469
Taxes, Federal & State	215,506			
Insurance (min'g prop.)	19,427	20,484	19,781	16,386
Depletion of coal prop.	474,424	672,311	461,090	460,000
Maintenance of prop'ty	54,891	3,952	7,676	28,058
Val. of coal stocked	cr. 870,128	cr. 424,528	cr. 172,732	1,469,465
Total	$13,472,109	$14,421,496	$15,480,823	$15,442,263
Net earnings	3,283,362	4,023,317	5,147,741	3,300,361
Deduct:				
Fixed interest on bonds	671,507	679,840	724,690	814,390
Dividends (13%)	1,197,300	1,197,300	1,197,625	1,197,625
Total deductions	$1,868,807	$1,877,140	$1,922,315	$2,012,015
Surplus	1,414,555	2,146,178	3,225,426	1,288,346

Note—For previous annual report of this company see Vol. 7 p. 833.

Federal Coal & Coke Co.—For the year ending June 30, 1915, this company, whose entire capital stock is owned by New England Coal & Coke Co., shows net surplus available for dividends of $109,336 (out of which a dividend of 15% was paid, compared with $69,094 the previous year. During the year the company mined 761,770 gross tons; increase 193,250 tons.